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VOLUME 5

AMERICAN SOCITY OF HE PITAL PHARM UMB

# A Note from your Editor

This 64 page issue will be delivered to you about two weeks late. Your editorial staff strives to get your publication in the mails by the fifteenth of each second month, but occasionally this is impossible for one or more reasons. This issue contains many important articles and also news of several progressive changes of an organizational nature. Your editor would like to comment on some of these.

INTERNSHIP STANDARDS - On page 233 is a discussion of Standards for Internships in Hospital Pharmacies which was prepared by the Committee With the on Minimum Standards. great and increasing demand for pharmacists with specialized hospital training, the necessity for well planned internships in hospital pharmacy has reached a degree of high urgency. This report, which is based upon the fundamental work of Donald A. Clarke who was formerly chairman of the Committee on Minimum Standards, represents basic suggestions to those who provide internships in hospital pharmacy. It also enables the prospective pharmacy intern to evaluate the various institutions offering such training. It is expected that these suggestions regarding standards for pharmacy internships will provide the basis for the improvement of established programs as well as fundamental information for the initiation of new programs.

RESEARCH IN HOSPITAL PHARMACY - The article "Some Experimental Applications of Pharmaceutical Preservatives" on page 209 represents an important trend in hospital pharmacy. Too many of us continue to perpetuate the errors of now obsolete recommended technic in our everyday work. It is indeed encouraging to see pharmaceutical problems in hospitals being solved by an objective experimental method. This method should be more generally adopted.

ISOTONIC SOLUTIONS - An outstanding example of the fundamental research possible in hospital pharmacies is discussed on page 211, by David Train who has written a review article emphasizing new concepts on isotonic solutions. Train's article discusses the work done for the Danish Pharmacopoeia Commission at the Dispensary of Bispebjerg Hospital in Copenhagen. This work of hospital pharmacists Lund, Nielson and Pedersen-Bjergaard has completely altered the present day thinking in regard to isotonic solutions, especially collyria. The authors have determined that a 0.9 per cent solution of sodium chloride is isotonic with lacrimal fluid as well as with blood. This new value will undoubtedly replace the formerly accepted figure of 1.4 percent sodium chloride as being isotonic with tears and will thus have wide ramifications in the preparation of eye solutions. It will also simplify the method of calculating isotonic eye solutions. The Danish workers also have shown that the freezing point of blood is -0.52°C., rather than -0.56°C. as formerly believed. However, since by their method a 0.9 percent solution of sodium chloride freezes at -0.52°C., the value of an isotonic solution of the salt has not been changed. The original report covered over 170 pages and the three page review of it will give you an idea of the significance of this important work.

MEMBERS OR NOT - If you do not find your name on the membership list which begins on page 248, one of two things has happened. Either we have made a mistake or you haven't paid your dues. Although we are sending this issue of THE BULLETIN to the more than 150 who haven't paid their 1948 dues, we are removing their names from our addressograph file as soon as this issue is mailed. We know that the great majority of these members have just continued to

overlook paying their dues. Some believe that their local chapter dues also cover the national A.S.H.P. dues, which is an error. So if you haven't paid your dues, mail your check to the Washington office at once. And since dues are payable for a year in advance why not send enough to cover your 1949 dues also? If we have made an error in not listing your name we shall be more than glad to correct it.

SALARIES - A welcome upward trend in salaries paid hospital pharmacists may be noted in the news item on page 221 concerning vacancies in V.A. pharmacies. The pay for a recent college graduate with no experience begins at essentially \$3000 and goes to \$3700. For those with only one year of experience the scale is approximately \$3700 to \$4500, while with two years experience the scale is from about \$4500 to \$5200. More power to the V.A! Let us do likewise.

ORGANIZATION CHANGES - At the last convention steps were taken to recognize affiliated chapters in the A.S.H.P. constitution. Although the Society has had affiliated groups for several years, this new amendment to the constitution serves to enphasize their importance to the Suciety. To further the collaboration between the Society and its affiliates, a House of Delegates to include representatives of all chapters has been established. Also, the method of electing the secretary of the A.S.H.P. has been modified to promote a continuity of services and activities. These changes, and others, are given in detail on page

Cordially,

Don E. Francke

### As The President

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SEES IT

The San Francisco Convention is now history and a new Society year has begun. Committees have been appointed following much earnest thought on the part of your president, and after many informal conferences with other members of the Society. The membership of the Committees appears elsewhere in this issue of THE BULLETIN.

### -EVERY MEMBER GET A MEMBER-

At the present time we have about 1200 dues paid members - a noteworthy number considering the relatively few years that have elapsed since our organization came into being. But there are still too many hospital pharmacists who have not joined our ranks, and who are not deriving the benefits the Society offers. Not only does membership strengthen the individual professionally, but more individuals mean a stronger organization. How easily we can double our membership if you and every other member of the Society each get us one new member.\* Selling the organization to prospective members is really easier than you may believe - within recent weeks, I have signed up three.

### -EVERY MEMBER GET A MEMBER-

Already our newly appointed Membership and Organization Committee is planning to launch a campaign for new members. My personal appeal for members is not intended to "steal the show" from the Committee, nor to detract from the po-

\* You will find application blanks for membership in the American Pharmaceutical Association and the American Society of Hospital Pharmacists in this issue of THE BULLETIN.

tency of their drive. My intention is that our entire membership supplement and give added force to the effort of the Committee.

### -EVERY MEMBER GET A MEMBER-

Now for an observation on pharmaceutical education. Within the last few weeks, three fulltime hospital pharmacists in the Baltimore area, who now hold a Bachelor of Science degree, have conferred with me on the advisability of returning to school for a master's degree. All are married men with small children. One is employed in a United States Public Health Service Hospital, and the other two are connected with non-profit hospitals. They apparently have seen the handwriting on the wall: the recommendation which I understand is embodied in the report of the Pharmaceutical Survey that the course in pharmacy be expanded to a six year curriculum, leading to a Doctor of Pharmacy degree. They forsee that day in the future when the difference between a baccalaureate and a master's or doctor's degree may or may not mean a promotion. Naturally, I encouraged them to return to the university for this additional work, provided they were financially able to do so. More recently, all three have enrolled in the Graduate School of the University of Maryland, as part-time students, with pharmacy as their major subject. Just how significant this may be, I do not know, but it has aroused my interest as to whether hospital pharmacists in general throughout the country are eager for additional education, and another degree following their names.

Cordially,

W. arthur Ponden

Application for Active Membership in the

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AMERICAN PHARMACEUTICAL ASSOCIATION

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Approving of its objectives, I hereby apply for ACTIVE MEMBERSHIP in the AMERICAN PHARMACEUTICAL ASSOCIATION and I enclose \$10.00 to cover annual dues for the twelve month period beginning with the month following my election to membership. Membership includes subscription to the Journal of the A.Ph.A. which is published monthly in two editions, "Practical Pharmacy" and "Scientific". Subscription to the Journal for non-members is \$4.00 for each Edition or \$7.00 combined. Members of the A.Ph.A. receive a 50% discount on the regular subscription rate of each Journal, therefore \$2.00 for each edition (total \$4.00) is allocated for subscription to the Journals.

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| Phobert P. Fischelis, Secretary, American Pharmaceutical Association<br>2215 Constitution Avenue N. W. Washington 7, D. C.   |  |
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### APPLICATION FOR MEMBERSHIP AMERICAN SOCIETY OF HOSPITAL PHARMACISTS

Approving of its objects, I hereby apply for membership in the American Society of Hospital Pharmacists and enclose \$3 00 as the annual membership fee for the current year. I hereby affirm that I am a member of the American Pharmaceutical Association in good standing. In lieu of such affirmation I am submitting an application for membership in the American Pharmaceutical Association together with dues and subscriptions to the journal as indicated on the application.

Name in Full

No. and Street

Town

State

Graduate of

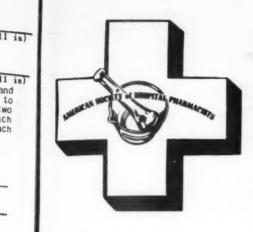
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Registered in State of \_\_\_\_\_\_\_ License No. \_\_\_\_\_\_\_
Where Employed \_\_\_\_\_\_\_ Address \_\_\_\_\_\_
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Member of what local groups (hospital)

American Society of Hospital Pharmacists 2215 Constitution Ave., N.W. Washington 7, D.C.



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Volume 5 - Number 5

September-October 1948

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Contributions of articles by hospital pharmacists, or by others interested in the progress of this important branch of the public health profession, will be accepted if they are of general interest to those in hospital pharmacy. The editors reserve the right to revise all material submitted, if necessary.

The American Society of Hospital Pharmacists and the American Pharmaceutical Association assume no responsibility for the statements and opinions advanced by contributors to THE BULLETIN. Views expressed in the editorials are those of the editor and do not necessarily represent the official position of the American Society of Hospital Pharmacists.

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Dear Sirs: Your article on isopropyl alcohol was read with much interest and should prove helpful and practical to pharmacists who have not had much experience with it.

Regarding the article on deodorizers for isopropyl alcohol in the May-June '47 issue of THE BULLE - TIN, please be advised that I have successfully used neroline crystals as a deodorant for isopropyl alcohol for some time and have found that 60-80 grains of neroline is sufficient to deodorize the alcohol (one (1) gallon).

The reason for bringing this to your attention is the fact that the cost of neroline is \$2.50 per pound. This cost is much less than the prices of the deodorizers mentioned in the article of May-June '47.

I might mention that the neroline used here is furnished by Magnus, Mabee & Reynard.

Trusting that the information offered here will prove helpful, I am,

Robert D. Silverman

St. Lawrence State Hospital Ogdensburg, New York

Dear Sir: For a long time I have wanted to write to you my personal congratulations on the excellent editing of THE BULLETIN and the superior format which it has achieved. It has outstrided any present publication on Pharmacy.

Realizing the infinite patience, the abundance of time and labor, the profundity and wealth of knowledge that is necessary to carry on this work, I assure you recognition is due.

I know all the members of our Chapter unite with me, commending your unselfish labor for their welfare and the nation's pharmacists employed in hospitals. We beg God's blessing on your endeavors.

A number of us, including myself, will or are looking forward to meeting many of the members from the east at the Convention in San Francisco. We participated as a Chapter for the first time at the Western Hospitals Association Convention on April twenty-first. The section was well attended and was very interesting; information about the meeting has been forwarded by our publicity chairman.

Sister Mary Junilla, O.S.F.

Queen of Angels Hospital Los Angeles 26, California Dear Sirs: I am a student at the College of Pharmacy of the University of Illinois, and I am employed as an apprentice in the Presbyterian Hospital The hospital issue of THE BULLETIN has been made available to me by Mr. Hutton. Because of its wealth of information, I would like to have my own copies of which I will make a file. Please advise on how to obtain subsequent issues of THE BULLETIN.

Robert M. Lucarelli

Chicago, Illinois

Dear Sirs: I would like to take this opportunity be express my appreciation to you and to the Hospital Division of the Association for the privilege of being able to participate in the Institute held recently at Princeton.

We all have a tremendous responsibility to promote the pharmaceutical services in hospitals if we are to attain the desired goal of adequate patient care at a reasonable cost and in an efficient manner. You may be assured of the continued interest and cooperation of this office along those lines.

J. R. McGibony, Senior Surged Assistant Chief Division of Hospital Facilities

U. S. Public Health Service Washington, D. C.

Dear Sirs: May I take this opportunity to express my appreciation for THE BULLETIN which to my mind is the finest publication in the pharmaceutical field that I receive.

P. C. Statia

Kitchener-Waterloo Hospital Kitchener, Ontario

Dear Sirs: This application was presented to me at the recent Hospital Pharmacy Institute at Princeton, New Jersey. Having attended this institute, was greatly impressed and feel that it was very much worth while.

John F. Kelley

Hospital City Erie, Pa.

# **EDITORIAL**

### THE PROPOSED MINIMUM STANDARDS

More than twelve years ago Edward Spease, then dean of the College of Pharmacy at Western Reserve University, submitted the first Minimum Standards for a Hospital Pharmacy which were later adopted by the American College of Surgeons<sup>1</sup>. This time represented an era when initiative and accomplishment in matters pertaining to hospital pharmacy were dependent upon the individual, rather than upon group activity. These standards have served well, filling a serious gap for many years. Hospital pharmacy is indeed grateful for the contributions of Dean Spease to its progress.

Although the American Society of Hospital Pharmacists began as an affiliate of the American Pharmaceutical Association in 1942, it did not find it possible to revise the Minimum Standards until this year. This was due principally to two reasons: the small membership; (for example in 1943 the Society had less than two hundred members) and the lack of finances. With the intervening years both deficiencies are well on the way toward correction. The Society now has a far greater number of actively interested members, each of whom adds to the total stature of hospital pharmacy. The Society, with The American Pharmaceutical Association spon sors the Division of Hospital Pharmacy, through which tasks heretofore either not attempted or considered impossible, are being completed now as a matter of course.

It was with funds provided by The Division of Hospital Pharmacy that the Minimum Standards Committee of the A.S.H.P. met at the A.Ph.A. Headquarters Building in Washington in May of this year to draft the new Proposed Minimum Standards. Under the able direction of Chairman Arthur Purdum the task has been brought rapidly to completion.

The preparation of the Proposed Minimum Standards is of great significance to those in hospital pharmacy. The final adoption and implementation of these standards will have a great effect on the practice of hospital pharmacy. They provide basic principles which will be accepted by the most influential hospital and allied organizations in the country. The standards will furnish the practicing hospital pharmacist with well accepted justifications and basic facts

upon which to plan and build his department to make it a stronger and better service unit.

It is very important that the Proposed Minimum Standards included on page 230 of this issue be considered distinctly separate from the Elaboration On The Proposed Minimum Standards which begins on page 231. The standards themselves represent basic comcepts or fundamental principles which are not controversial. However, it is probable that several items in the elaboration are open to further discussion. Undoubtedly, certain modifications will be made when the problems of pharmacy practice in the many types of hospital organizations, with their several types of medical and administrative staffs, have been considered in fullest detail.

Members of the Society are urgently requested to send their comments and criticisms of both the Proposed Minimum Standards and the Elaboration to the new committee chairman Evlyn Gray Scott, St. Luke's Hospital, Cleveland. Your suggestions will have great influence on the final form of the standards and elaboration.

The standards have been printed in the form as originally submitted by The Committee on Minimum Standards. The Policy Committee of the Division of Hospital Pharmacy already has received the standards and has made recommendations for certain changes, principally alterations of wording for the purpose of clarification. These recommendations are now ready to go to the Executive Committee of the A.S.H.P. and the Council of the A.Ph.A. for approval. After approval has been obtained from these bodies, the standards will be submitted to the American Hospital Association for approval. After acceptance by these organizations, they will be submitted to The American College of Surgeons and to the American Medical Association for action.

After final approval and adoption by all organizations concerned, the Minimum Standards For Pharmacies In Hospitals will serve as a basis for great advancement in pharmacy practice in hospitals. In the meantime, each of us practicing in hospitals would do well to study both the standards and the elaboration and to establish a program based upon the ideas suggested in them for the growth and improvement of pharmacy service in our own institution.

DON E. FRANCKE, Editor

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<sup>1.</sup> Spease, E. and Porter, R. M.: Minimum Standards For a Hospital Pharmacy, J. Am. Pharm. Assoc. 25:65 (January) 1936.

# Manufacturing Ointments, Emulsions, and Suspensions

By W. Arthur Purdum, Chief Pharmacist Johns Hopkins University Hospital

MANUFACTURING IN THE HOSPITAL
PHARMACY IS DISCUSSED ALONG WITH
PHOTOGRAPHS OF EQUIPMENT AND
FORMULAS FOR PREPARATIONS WHICH
CAN BE MANUFACTURED ECONOMICALLY IN THE HOSPITAL PHARMACY--

Because of the rather limited time allotted for this comprehensive subject, it will not be possible to go into the theoretical aspects of the manufacture of these products. Not many years ago, ointment bases nearly always consisted of mixtures of beeswax, wool fat and petrolatum. Occasionally lard or cold cream were employed. Today the tendency is toward preparations which are more elegant pharmaceutically and cosmetically. The majority of ingredients present in a modern emulsified washable ointment would not be recognizable to pharmacist Rip Van Winkle should he return today after a twenty year nap. Likewise, a large number of newer agents are available to facilitate emulsification whereas formerly, when an emulsion was to be prepared, pharmacists would routinely use acacia or tragacanth. Official formulas have been improved and new formulas given recognition in the U. S. P. and N. F. For example, the current formula for calamine lotion containing bentonite as a suspending agent is far superior to the old formula. Neocalamine preparations have been introduced which, from the cosmetic viewpoint, are preferred over the older calamine products. Newer bases for ointments include hydrophilic ointment and two forms of pectin paste. Sodium lauryl sulfate, sodium alginate and glyceryl monostearate are among the newer emulsifiers.

Manufacturing equipment for the production of these preparations will be discussed, specific formulas will be given, and figures given which illustrate savings that can be effected.

### **EQUIPMENT**

Apparatus for Controlled Heating --

The application of heat is necessary frequently in the preparation of ointments. The degree of heat desired rarely exceeds 100°C.

Water Baths. For small scale operations, such as the melting of a small quantity of wax, the water bath is quite useful.

Steam Jacketed Kettles. For larger operations a steam jacketed kettle is the equipment of choice. These are usually of tinned iron or of copper construction and are available in a number of sizes. They are mounted on a metal framework which permits tilting of the kettle to facilitate removal of the contents. Part of the rim of the kettle is fashioned into a pouring lip so that liquids may be poured from it into containers having relatively small orifices.

<sup>\*</sup>Presented at the Third Institute on Hospital Pharmacy, Princeton, N. J., June 28-July 2, 1948.

Infra Red Lamps. Another useful source of heat having certain applications in the manufacture of ointments is the infra red lamp. These lamps are available in both a luminous and non-luminous type. Various wattages may be obtained depending upon the degree of heat sought. The luminous type may be obtained with a reflector built into the bulb. The shorter wave lengths of infra red are more penetrating than are the longer and for this reason, the visible type is claimed to be more efficient for heating than are the non-luminous (which radiate primarily the longer wave lengths). This form of heat is very convenient to maintain ointments in a liquid condition during milling if there is danger of solidification.

### MIXERS

Alsop Mixers. 1 This is a high speed type of mixer. Mixing is effected by two propellers attached to a single shaft. The shaft, in turn, is connected to an electric motor which is mounted at the top of the mixing vessel. The propeller blades are such that the upper propeller forces the liquid downward while the lower propeller forces the liquid upward, the combination resulting in a churning action. The propeller shaft should be set into the mixing vessel so that the propellers are away from the center and near the bottom. Should the propellers be set approximately in the center, less effective mixing will result, and a vortex will be formed causing air to be whipped into the product. Numerous sizes are available with or without glass lined mixing tanks. Both open top and closed tanks are available. The mixer is suitable for the preparation of solutions, liquid suspensions of solids and certain types of liquid emulsions.

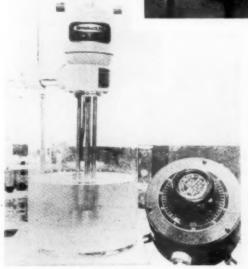
Homo-Mixers.<sup>2</sup> The Homo-Mixer is a high speed mixer of the turbine type. It consists of a vertical shaft rotating at 7000 R.P.M. (in the smaller models) driving a rotor through fixed clearances between the edges of the rotor and the inside wall of the stator. Liquids passing through this mechanism are subjected to intense hydraulic shear. An adjustable horizonal baffle plate located above the turbine but below the surface of liquid minimizes surface boil and the formation of a vortex. This mixer is especially suited for the high speed mixing of liquids where the incorporation of air would be undesirable.



Infra Red Lamp



Alsop Mixer



Homo-Mixer

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<sup>1.</sup> Available from Alsop Engineering Corporation, 627 Main Street, Milldale, Connecticut.

Available from Eppenbach, Inc., 45-10 Vernon Boulevard, Long Island City 1, New York.



**Hobart Mixer** 



Pony Mixer





Hobart Mixers.3 These are primarily designed as food mixers but have some very useful pharmaceutical applications. Sizes range in capacity from 5 to 110 quarts. They are suitable for the mixing of liquids and semisolid preparations. Standard equipment includes a sturdy flat beater for the mixing of viscous products such as ointments and a wire loop whip suitable for the emulsification of liquids. Mixing is effected in a round bottomed bowl through planetary action of the beater or whip. A transmission provides for 3 speeds of operation on the smaller models and four speeds on the larger. Speeds range from 56 to 591 R.P.M. Also available is an oil dropper which may be attached above the bowl and may be used to introduce oil into the bowl during emulsification.

Pony Mixers. 4 Pony Mixers are made in various sizes having capacities from 2 to 125 gallons. The mixer consists of a cylindrical vessel, open at the top, and containing a series of spatula-like mixing blades, supported from above, which revolve in one direction while the container revolves in the opposite. Also attached to the support for the mixing blades is a stationary scraper set very close to the sidewall of the container. The purpose of this scraper is to remove material adhering to the sidewall and direct it into the path of the mixing blades. The mixer is quite useful for the manufacture of ointments, pastes and other semisolid preparations. While this machine effects uniform mixing of ingredients, it usually does not produce a smooth product if insoluble solid material is present. Such preparations, after mixing, should be passed through an ointment mill.

Hand Homogenizer.<sup>5</sup> Liquid to be processed is placed in the hopper of the homogenizer which has a capacity of approximately 500 cc. Then it is pumped under high pressure through a minute orifice which effects homogenization. An agitator attached to the pump shaft causes gentle mixing of the liquid in the hopper maintaining more or less uniform dispersion of the material to be homogenized.

<sup>3.</sup> Hobart Mixers are manufactured by The Hobart Manufacturing Company, and may be purchased from kitchen equipment dealers.

<sup>4.</sup> Available from the J. H. Day Company, P. O. Box 105, Station B, Cincinnati 22, Ohio.

<sup>5.</sup> Sold by the American Professional Pharmacist, 67 Wall Street, New York 5, New York.

The Eppenbach Colloid Mill.6 In the Eppenbach colloid mill, the liquid to be milled is subjected to mechanical shearing between teeth in the rotor and stator. The liquid is forced through the grinding mechanism under high pressure created by a turbine type of pump. The distance between the rotor and stator may be adjusted, even during operation of the mill. If necessary to mill the material more than once, it may be run through a recirculating bypass system as long as desired without discharging from the mill. This equipment is ideal for the preparation of liquid suspensions, emulsions and certain ointments. Ointments may be kept in a fluid condition by passing hot water through jackets which surround the grinding mechanism or by means of infra red radiation.

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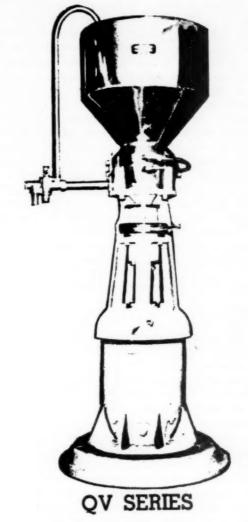
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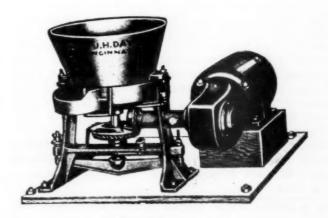
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Harris Mills. Two sizes of these mills are available having capacites which make them useful in the manufacture of ointments in the hospital. The smaller of these, having a hopper capacity of quarts is available for hand operation or pulley drive. The larger, which will hold 3 gallons, is equipped with motor drive or pulley drive. This larger mill may be obtained with or without a water jacket. Hot water placed in the water jacket prevents congealing of the ointment during milling. In operation, the ointment to be milled is placed in the hopper, the floor of which is a revolving plate. The edge of this plate and also the bottom surface of the sidewall of the hopper contains numerous corrugations or teeth which are responsible for the grinding action of the mill. The fineness of the ointment produced depends upon the distance between the grinding surfaces and upon the number of millings to which the ointment is subjected. As the ointment passes slowly between the grinding surfaces and clings to the periphery of the plate, a stationary scraper arm collects the ointment and directs it into a container below.



Eppenbach Colloid Mill



Harris Ointment Mill

<sup>6.</sup> Available from Eppenbach, Inc., 45-10 Vernon Boulevard, Long Island City 1, New York.

<sup>7.</sup> Available from the J. H. Day Company, P. O. Box 105, Station B, Cincinnati 22, Ohio.

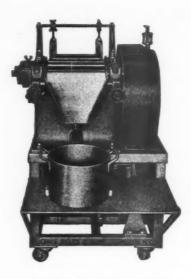
Roller Ointment Mills. Roller mills usually consist of three horizontal rollers set very close together in a horizontal plane. The distance between rollers is adjustable. Ointment to be milled is fed on to the top surface of the first roller and carried by the motion of the roller to a very narrow slot between the first and second rollers. At this point the ointment is crushed between the rollers. The second roller, revolving in the opposite direction from the first and at a somewhat higher speed, also exerts a shearing action and carries the ointment on to the crevice between it and the third roller. The third roller revolves in the same direction as the first and at a speed slightly greater than that of the second. Here again the ointment is both crushed and sheared. The ointment adhering to the third roller is scraped from this roller by a stationary scraper and the ointment is directed into a container below. One milling of the ointment frequently is insufficient to produce a fine product in which case the ointment is remilled until satisfactory.

Collapsible Tube Fillers and Closers. 8 Hand operated tube fillers and closers are useful equipment for the hospital pharmacy. Semi-automatic and automatic equipment are extremely expensive and their production capacity so great that they are impractical, even for the largest hospital.

Hand operated fillers consist of a hopper for the ointment or paste to which is attached a cylindrical spout. Spouts of various diameters are furnished depending on the sizes of tubes to be filled. Care should be exercised in placing the material in the hopper'so as to exclude air bubbles which, if present, would appear in filled tubes. Means are provided for regulating the quantity of material to be placed in a single tube. The empty tube is placed on the spout, a crank is then turned which causes the ointment to extrude and push the tube partially off the spout as the tube fills from top to bottom. Overfilling of the tube should be avoided to provide an ample length of empty tube for adequate closing.

The simplest device available for closing tubes is a pair of pliers with a broad head and flat surfaced jaws. Another type, which is mounted on a table, contains one stationary and one movable jaw activated by a hand lever. In this device, the depth of the fold may be regulated and kept uniform. Still another type of similar closer is operated by a foot pedal. After making two or three folds, it is customary to place a metal clip over the folds to prevent their opening when the tube is squeezed. The clip may be fastened to the tube by means of the closing machine. Modern automatic closure equipment embodys a device which crimps the folds of the tubes and does away with the need for attaching clips.

8. Available from Arthur Colton Company, 2625 East Jefferson Avenue, Detroit 7, Michigan, and F. J. Stokes Machine Company, 5846 Tabor Road, Olney P. O. Philadelphia 20, Pennsylvania.



Roller Ointment Mill

HAND-OPERATED TUBE CLOSING MACHINE



SEMI-AUTOMATIC TUBE CLOSING AND SEALING MACHINE



### FORMULAS

### EMULSIONS AND SUSPENSIONS

### ALUMINUM HYDROXIDE GEL U.S.P.

| 1. Aluminum Hydroxide Paste <sup>9</sup> | 250    | lb. |
|--|--------|-----|
| 2. Peppermint Oil (if desired)           | 10     | cc  |
| 3. Glycerin                              | 10800  | CC  |
| 4. Sodium Benzoate                       | 1135   | Gm  |
| 5. Distilled Water, a sufficient         |        |     |
| quantity, to make                        | 227000 | cc  |

Mix the ingredients thoroughly in a high speed electric mixer. Pass the product through a colloid mill if necessary.

The U.S.P. permits the addition of peppermint oil, glycerin, sucrose, or saccharin if desired. One-half per cent of sodium benzoate or benzoic acid may be added as a preservative. If thorough mixing of the ingredients is obtained, it will be unnecessary to pass the gel through a colloid mill.

### BENZYL BENZOATE LOTION U.S.P.

Prepare the product by the official process and pass the lotion through a colloid mill.

### CALAMINE LINIMENT J.H.H.

| 1. Kaolin, powdered     | 120   | Gm. |
|-------------------------|-------|-----|
| 2. Tragacanth, powdered | 125   | Gm. |
| 3. Calamine             | 1440  | Gm. |
| 4. Zinc Oxide           | 1440  | Gm. |
| 5. Glycerin             | 750   | cc. |
| 6. Distilled Water      | 12000 | cc. |
| 7. Propyl Laurate       | 600   | cc. |
| 8. Cetyl Alcohol        | 300   | Gm. |
| 9. Butylparaben         | 20    | Gm. |
| 10. Terpineol           | 6     | cc. |
| 11. Sesame Oil          | 3750  | cc. |
| To make about           | 18000 | cc. |

Add 1, 2, 3 and 4 to 5, and mix well. Add 6. Melt 8 and add 7, 9, 10 and 11, and mix well. Add the oily mixture to the aqueous phase and pass the product through a colloid mill.

This preparation has the same content of calamine and zinc oxide as calamine liniment N.F. However, this formula is superior pharmaceutically to that of the N.F. in that the

emulsion is more stable and the solids remain in better suspension. This formula produces an oil in water emulsion while the N.F. product is of the water in oil type.

### HAND LOTION

| 1. Stearic Acid            | 1200  | Gm. |
|----------------------------|-------|-----|
| 2. Hydrous Wool Fat        |       | Gm. |
| 3. Light Liquid Petrolatum | 600   | cc. |
| 4. Butylparaben            | 10    | Gm. |
| 5. Benzaldehyde            | 12    | cc. |
| 6. Triethanolamine         | 360   | cc. |
| 7. Distilled Water         | 9720  | cc. |
| To make about              | 12000 | cc. |

Melt 1 and 2, add 3 and 4, and mix well. Add 5 and 6 to 7 and mix well. Add the fatty mixture to the aqueous with stirring and pass the product through a colloid mill.

After testing numerous formulas, the formula above was adopted for routine usage. It is comparatively inexpensive to prepare.

### KAOLIN AND PECTIN MIXTURE

| 1. | Kaolin                        | 3740  | Gm. |
|----|-------------------------------|-------|-----|
| 2. | Pectin                        | 83    | Gm. |
| 3. | Butylparben                   | 5     | Gm. |
|    | Vanilla Tincture              | 500   | cc. |
| 5. | Methyl Cellulose 4000,        |       |     |
|    | 1% Solution                   | 2500  | cc. |
| 6. | Distilled Water, a sufficient |       |     |
|    | quantity, to make             | 19000 | cc. |

Mix the ingredients in a high speed electric mixer and pass the product through a colloid mill.

When preparing this product in a high speed electric mixer, the entire process may be carried out at room temperature. If a satisfact-ory mechanical mixer is not available, the pectin should be hydrated by placing it in boiling distilled water.

### LIQUID PETROLATUM EMULSION 65%

| 1. Liquid Petrolatum  | 650.00  | Gm. |
|-----------------------|---------|-----|
| 2. Acacia, granulated | 12.50   | Gm. |
| 3. Sodium Alginate    | 5.00    | Gm. |
| 4. Vanillin           | 0.04    | Gm. |
| 5. Saccharin          | 0.05    | Gm. |
| 6. Butylparaben       | 0.30    | Gm. |
| 7. Alcohol            | 50.00   | Gm. |
| 8. Distilled Water    | 300.00  | Gm. |
| To make about         | 1000.00 | cc  |

<sup>9.</sup> Available from Schofield-Donald Company, Inc.,

<sup>88</sup> Shipman Street, Newark, New Jersey.

Heat 8 to the boiling point and place in a high speed electric mixer. With mixer running, add 2 and 3 to form a mucilage, then add 1 very slowly to form the emulsion. Dissolve 4, 5 and 6 in 7, add this solution to the emulsion and mix well. Pass the product through a colloid mill.

This formula was devised to replace a popular trade-named mineral oil emulsion. The small proportion of sodium alginate called for in the formula permits a marked reduction in the quantity of acacia normally required for satisfactory emulsification.

### MAGNESIA MAGMA U.S.P.

| 1. Hydro Magma Paste <sup>10</sup> | 50    | lb. |
|------------------------------------|-------|-----|
| 2. Citric Acid                     | 85    | Gm  |
| 3. Flavoring Oil (if desired)      | 425   | cc. |
| 4. Water, a sufficient quantity,   |       |     |
| to make                            | 85000 | cc. |

Mix the ingredients thoroughly in a high speed electric mixer. Pass the product through a colloid mill if necessary.

Citric acid is included in the formula to minimize the action of the glass container on the magma. The manufacture of the magma by this process is much simpler than the double decomposition process formerly recognized by the U.S.P. This process is also less troublesome than preparing the magma by hydration of magnesium oxide.

### MASSAGE LOTION

| 1.  | Glyceryl Monostearate    |       |     |
|-----|--------------------------|-------|-----|
|     | self emulsifying         | 700   | Gm. |
| 2.  | Stearic Acid             | 900   | Gm. |
| 3.  | White Wax                | 280   | Gm. |
| 4.  | Glyceryl Monoricinoleate | 210   | cc. |
| 5.  | Sesame Oil               | 1260  | cc. |
| 6.  | Liquid Petrolatum        | 4200  | cc. |
| 7.  | Butylparaben             | 17    | Gm. |
| 8.  | Alcohol                  | 200   | cc. |
| 9.  | Perfume                  | 100   | cc. |
| 10. | Carbitol                 | 280   | cc. |
| 11. | Triethanolamine          | 420   | cc. |
| 12. | Distilled Water          | 14800 | cc. |
|     | To make about            | 25000 | cc. |

Melt 1, 2 and 3, add 4, 5 and 6, and heat to about 65°C. Mix 11 and 12 and heat to about

10. Available from Whittaker, Clark and Daniels, Inc., 260 West Broadway, New York 13, N. Y.

65°C. Add the oily mixture to the aqueous and stir thoroughly. Dissolve 7 in 8, add 9 and 10, and add this solution to the emulsion. Pass the product through a colloid mill.

### **OINTMENTS AND PASTES**

### ALUMINUM PASTE

| 1. Aluminum Powder     | 25 Gm. |
|------------------------|--------|
| 2. Zinc Oxide Ointment | 75 Gm. |

Incorporate 1 into 2 by trituration. Large quantities may be prepared by melting 2, placing it in a pony mixer and adding 1. After thorough mixing, pass the paste through an ointment mill.

Care should be exercised in handling aluminium powder as it occurs in an extremely fine condition and floats readily in the atmosphere. Should a softer paste be desired, part of the zinc oxide ointment may be replaced with light liquid petrolatum.

### BISMUTH SUBNITRATE AND PERUVIAN BALSAM OINTMENT

| 1. | Bismuth Subnitrate | 40 | Gm. |
|----|--------------------|----|-----|
| 2. | Castor Oil         |    | Gm. |
| 3. | Wool Fat           | 22 | Gm. |
| 4. | Ceresin Wax        | 7  | Gm. |
| 5. | Peruvian Balsam    | 1  | Gm. |

To make 100 Gm.

Melt 3 and 4, incorporate 1, and allow the mixture to cool to room temperature. Mix 2 and 5, and incorporate into the mixture of the other ingredients. Pass the ointment through an ointment .. ill.

It is important to note that the peruvian balsam should not be added to the liquefied mixture of the other ingredients as separation will occur. This formula is identical with a proprietary ointment intended to protect the nipples of nursing mothers.

### BISMUTH TRIBROMPHENATE OINTMENT

| 1. | Bismuth Tribromphenate | 270  | Gm. |
|----|------------------------|------|-----|
| 2. | Petrolatum             | 8730 | Gm. |

Melt 2 and place it in a pony mixer. Add 1 and mixthoroughly. Pass the mixture through an ointment mill.

### BUTTOCK PASTE

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| 1. Castor Oil  |      | Gm. |
|--|------|-----|
| 2. Peruvian Balsam<br>3. Zinc Oxide, in very fine powder |      | Gm. |
| 4. Boric Acid, in very fine powder                       |      | Gm. |
| 5. Yellow Ointment                                       | 6670 | Gm. |
| To make  | 9000 | Gm. |

Melt 5, incorporate 3 and 4, and allow the mixture to cool. Mix 1 and 2, add them to the other ingredients, mix well and pass the product through an ointment mill.

CAUTION. The ointment must be cool before adding the Peruvian Balsam.

This formula is useful in the treatment of bed sores.

### COAL TAR CREAM

| 1. Stearic Acid            | 4500  | Gm. |
|----------------------------|-------|-----|
| 2. Cetyl Alcohol           | 600   | Gm. |
| 3. White Wax               | 600   | Gm. |
| 4. Wool Fat                | 900   | Gm. |
| 5. Light Liquid Petrolatum | 750   | cc. |
| 6. Coal Tar Solution       | 1800  | cc. |
| 7. Sodium Borate           | 120   | Gm. |
| 8. Potassium Carbonate     | 175   | Gm. |
| 9. Starch                  | 540   | Gm. |
| 10. Distilled Water        | 18000 | cc. |
| 11. Rhodinol "C"           | 15    | cc. |
| 12. Menthol                | 38    | Gm. |
| 13. Carbitol               | 1000  | cc. |
| To make about              | 29000 | Gm. |

Melt 1, 2, 3 and 4, add 5 and 6 and heat the mixture to approximately 70°C. Add 7, 8 and 9 to 10 and heat the mixture to approximately 70°C. Pour the fatty mixture into the aqueous and mix well. Dissolve 11 and 12 in 13, and incorporate this solution into the emulsion. While warm pass the product through a colloid mill.

This formula, originated at The Johns Hopkins Hospital, is available commercially under at least two trade names. Rhodinol "C" is quite effective in masking the odor of coal tar.

### ELECTRODE PASTE

| 1. | Sodium Chloride          | 300.0  | Gm. |
|----|--------------------------|--------|-----|
| 2. | Potassium Bitartrate     | 15.0   | Gm. |
| 3. | Butylparaben             | 0.3    | Gm. |
| 4. | Distilled Water          | 1000.0 | cc. |
| 5. | Tragacanth, powdered     | 35.0   | Gm. |
| 6. | Propylene Glycol         | 90.0   | cc. |
|    | Siberian Pine Needle Oil | 0.5    | cc. |
| 8. | Pumice, powdered         | 480.0  | Gm. |
|    | To make about            | 1900.0 | Gm. |

Dissolve 1, 2 and 3 in boiling 4, add 5 to 6, mix well, add this mixture to the hot solution and stir rapidly until a gel is formed. Pass the gel through a colloid mill. Mix 7 with 8, add to the gel, mix thoroughly and force the paste through coarse muslin or cheese cloth.

In preparing this product, it is most important that the pumice be added after the gel has been milled. The abrasive property of the pumice could damage the mill seriously.

### HYDROPHILIC OINTMENT J.H.H.

| 1. Nimco Base <sup>ll</sup> | 100 Gm. |
|-----------------------------|---------|
| 2. White Wax                | 100 Gm. |
| 3. White Petrolatum         | 800 Gm. |

Melt the ingredients, stir well, and allow the ointment to congeal.

This ointment is capable of absorbing more than six times its weight of water. Nimco base itself will take up more than twelve times its weight of water.

### ILEOSTOMY PASTE

| 1. | Zinc Oxide, | in | very | fine | powder | 1200 | Gm. |
|----|-------------|----|------|------|--------|------|-----|
| 2. | Starch      |    |      |      |        | 2500 | Gm. |
| 3. | Castor Oil  |    |      |      |        | 2000 | cc. |
| 4. | Petrolatum  |    |      |      |        | 5000 | Gm. |

Melt 4, transfer it to a pony mixer, add 1, 2 and 3, and mix thoroughly. Pass the product through an ointment mill.

<sup>11.</sup> Available from N. I. Malmstrom and Company, 147 Lombardy Street, Brooklyn 22, N. Y.

### LUBRICATING JELLY

| 1. Tragacanth, in ribbons                                    | 1000  | Gm. |
|--|-------|-----|
| 2. Propylene Glycol  | 1600  | cc. |
| 3. Distilled Water   | 20000 | cc. |
| 4. Roccal Solution, 10%                                      | 200   | cc. |
|  | 200   | cc. |
| <ul><li>5. Alcohol</li><li>6. Rosesol<sup>12</sup></li></ul> | 20    | cc. |
| To make about  | 20000 | cc. |

Heat 3 and 4 together to the boiling point, add 1, and allow the mixture to stand over night. Mix 2, 5 and 6, and add this solution to the mucilage. Mix well and pass the product through a colloid mill.

### **OPHTHALMIC OINTMENT BASE**

| 1. Nimco Base       | 12.5 Gm |
|---------------------|---------|
| 2. Distilled Water  | 5.0 cc. |
| 3. White Petrolatum | 82.5 Gm |

Melt 1 and 3, incorporate 2 with stirring and allow the mixture to congeal.

### SODIUM CHLORIDE OPHTHALMIC OINTMENT

| 1. Sodium Chloride  | 5  | Gm. |
|---------------------|----|-----|
| 2. Nimco            | 5  | Gm  |
| 3. Distilled Water  | 30 | cc. |
| 4. White Petrolatum | 60 | Gm. |

Dissolve 1 in 3. Melt 2 and 4, incorporate the aqueous solution, and allow the mixture to congeal.

### TOOTH PASTE

| 1. | Saccharin Sodium            | 3        | Gm. |
|----|-----------------------------|----------|-----|
| 2. | Glycerin                    | 3360     | cc. |
|    | Precipitated Calcium Carbon | nate1140 | Gm. |
|    | Prepared Chalk              | 5355     |     |
|    | Hard Soap                   | 750      | Gm. |
|    | Butylparaben                | 5        | Gm. |
|    | Flavor                      | 150      | cc. |
|    | Erythrosine Solution 10%    | 2        | cc. |
|    | Starch                      | 975      | Gm. |
|    | Water                       | 2130     | cc. |
|    | To make about               | 15000    | Gm. |

12. Available from Magnus, Mabee and Reynard, Inc., 16 Desbrosses Street, New York 13, N. Y.

Heat 1630 cc. of 10 with 1500 cc. of 2 to a temperature of about 100°C. Make a paste of 9 with 500 cc. of 10, and add this to the hot solution with vigorous agitation. Add 1, the balance of 2, 5 and 6, and pass the product through a colloid mill. Transfer it to a pony mixer, add 3, 4, 7 and 8, and mix well.

The paste is tinted pink by the addition of erythrosine to mask the gray color imparted by prepared chalk.

### WASHABLE OINTMENT BASE (BEELER)

| 1. Cetyl Alcohol         | 15 Gm |
|--------------------------|-------|
| 2. White Wax             | 1 Gm  |
| 3. Propylene Glycol      | 10 Gm |
| 4. Sodium Lauryl Sulfate | 2 Gm  |
| 5. Water                 | 72 Gm |

Melt 1 and 2, add 3 and heat to about 65°C. Dissolve 4 in 5 and heat to about 65°C. Slowly add the oil phase to the aqueous solution with constant stirring, and continue stirring for about ten minutes. Thereafter, stir the product occasionally to the point of congealing.

### ZINC OXIDE GELATIN PASTE

| 1. | Liquified Phenol | 280  | cc. |
|----|------------------|------|-----|
| 2. | Gelatin          | 2700 | Gm. |
| 3. | Glycerin         | 7400 | cc. |
| 4. | Water            | 6000 | cc. |
| 5. | Zinc Oxide       | 1000 | Gm. |
|    |                  |      |     |

To make about

18000 Gm.

Heat 4000 cc. of 3 with 2 and 4 to about 650 C. Maintaining this temperature, stir until 2 has dissolved. Triturate 5 with the remainder of 3 and incorporate into the glycerogelatin mixture. Strain the product through coarse muslin or cheese cloth. After the product has cooled somewhat, but before it has congealed, incorporate 1 with stirring.

The phenol should be added last to prevent undue volatilization which would occur if added to the other ingredients while they are still hot.

### ECONOMIC ASPECTS

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nt dGiven below is a short list of preparations accompanied by figures representing the cost to manufacture these products and their cost when purchased. The figures given, representing the cost of manufacture are for materials only and do not include labor. The charge for labor would be very difficult to estimate because there is no more labor involved in the manufacture of twenty-five gallons of a preparation than in the manufacture of one gallon. In calculating the costs of ingredients, the prices used were those for relatively small quantities such as would be purchased by a one hundred bed hospital. Naturally, the purchase of larger quantities of ingredients at lower prices would result in greater savings to the institution. For example, the cost of white petrolatum was computed on the ten pound price at \$.19 perpound, whereas if it is purchased in 375 pound drums, the cost is only \$.06 3/4 per pound.

TABLE I

| Liquid Preparations            | Cost to Manufacture<br>per gallon | Cost to Purchase<br>per gallon |
|--------------------------------|-----------------------------------|--------------------------------|
| Aluminum Hydroxide Gel         | \$ .98                            | \$ 3.63                        |
| Benzyl Benzoate Lotion         | 4.02                              | 8.90                           |
| Kaolin and Pectin Mixture      | .91                               | 5.10                           |
| Liquid Petrolatum Emulsion 65% | 1.22                              | 2.24                           |
| Magnesia Magma                 | .34                               | .85                            |

TABLE II

| Ointments                   | Cost to Manufacture    |                | Cost to Purchase        |
|-----------------------------|------------------------|----------------|-------------------------|
| Ammoniated Mercury Ointment | \$ 0.40 per lb.        | 1 lb.<br>5 lb. | \$ 1.32<br>1.14 per lb. |
| Boric Acid Ointment         | 0.28 per lb.           | 1 lb.<br>5 lb. | .81<br>.66 per lb.      |
| chthammol Ointment          | 0.55 per lb.           | 1 lb.<br>5 lb. | 1.80<br>1.68 per lb.    |
| Bismuth Subnitrate and      | 0.45 1                 |                |                         |
| Peruvian Balsam Ointment    | 0.15 per 1 oz.<br>tube | 7/8 oz. tube   | .39                     |

The manufacture of many pharmaceuticals in the hospital pharmacy, therefore, can be accomplished at a great saving over the cost to purchase these preparations from manufacturers. The purchase price of a pharmaceutical includes, in addition to the charge for materials and labor, a substantial charge for overhead, including control and advertising, plus a legitimate profit. The charge for overhead in an efficiently operated hospital pharmacy should be considerably lower than that for a pharmaceutical manufacturer. Manufacturing equipment, when properly cared for, will last for many years,

and for accounting purposes, may be depreciated over a ten to twenty-five year period. In the hos. pital pharmacy, where one person manufactures a preparation from start to finish, the control meassures exercised by pharmaceutical manufacturers are, with few exceptions, unnecessary. In the manufacture of a single product, an elaborate control set-up is imperative. Then there is the item of profit which the manufacturer must consider if he is to remain in business. This entire item can be saved for the hospital by manufacturing in the hospital pharmacy.

### "SOLUTION G" AND OTHER URINARY CALCULI SOLVENTS\*

By C. J. M. WOZENCROFT, Ph.C.

IT HAS LONG been one of the aims of the urologist to develop a means of removing stone without surgical operation, and to this end much research has been done. It is intended here to give a brief survey of the work leading up to the development of "Solution G," together with some notes on the pharmaceutical preparation of this solution. The early history of efforts to find a solvent for stone is extremely lengthy, but only in comparatively recent times has the problem been tackled in

anything like a scientific manner.

In 1924 Crowe'll successfully dissolved cystin calculi by local irrigation with alkaline mercurochrome solution and an alkalising diet. Keyser1 (1933) almost completely dissolved a calcareous mass in the left kidney of a patient by local irrigation with and oral administration of dilute aqua regia, together with the use of an acid diet and administration of ammonium chloride and nitrate. In other cases he used malic acid and achieved two successful dissolutions. Snapper, Bendien and Polak? (1936) based their work on the fact that some substances, while being hardly soluble in water, are soluble in aqueous solutions of other salts (hydrotrophy). They carried out numerous experiments in vitro and applied their findings in vivo with some success, using sodium benzoate and sodium salicylate.

Another approach to the problem has been in the direction of certain calcium-dissolving salts which would dissolve calculi not so much by their acidity as by their ionic affinity for calcium. The solubility of calcium in association with phosphates is well-known chemically and the use of Calgon (sodium hexametaphosphate) in removing boiler scale is a parallel example from industrial practice. Citrates also have a solvent action upon calcium which is not entirely dependent

upon the pH of the solution.

Albright, Sulkowitch and Chute' (1939) reported that a solution containing sodium citrate 3.8 per cent. and citric acid 3.8 per cent. had dissolved a vesical calculus on local irrigation. Hexametaphosphates tried on animals proved to be too caustic. Suby, Suby and Albright48 conducted numerous experiments with citric acid/sodium citrate solutions. Their original solution had the formula:-

Sodium citrate ..... 1.0 litre

This has a pH value of 4 and proved very irritant. similar solution adjusted to pH 5 was less caustic, but still too irritant to be of any practical use.

Lævulinic acid solutions were also used with some success, but here again their irritability proved too great, the same conditions applying, namely, although by lowering the pH the stone-dissolving properties were increased, the irritability of

the solution was also increased. The addition of magnesium sulphate to the solution of lævulinic acid resulted in hardly any change in stone-dissolving properties, but a considerable diminu-

tion in irritibility was noted.
"Solution B" was then introduced with the formula:- 
 Sodium citrate
 25.2

 Magnesium sulphate
 18.5

 Distilled water to
 1.0
 Sodium citrate 1.0 litre

This solution led on to "Solution G," notes on which are given below.

More recently Saur has shown that "Solution G" has an appreciable bactericidal effect against E. Coli, P. Vulgaris, P. Morganii, and Str. fæcalis, so increasing the usefulness of the solution. The use of "Solution G" is, or course, sprannonly to "phosphatic stone," i.e., stone composed of calcium The use of "Solution G" is, of course, applicable phosphate with or without calcium carbonate or magnesiumammonium phosphate or both.

The formula given by Suby is as follows:-

| Citric acid B.P.          | 32 · 3 gm. |
|---------------------------|------------|
| Magnes, oxide (anhyd.)    | 3.8 gm.    |
| Sodium carbonate (anhyd.) | 4.4 gm.    |
| Distilled water to        | 1.0 litre  |

When correctly prepared the pH of this solution is 4.

The magnesium oxide and the sodium carbonate should both be heated in an oven at 100° C., since both may contain an appreciable amount of water. If this is not done a solution of lower pH may result with consequent increase in irritibility. The citric acid should be dissolved in about 600 mils of water and the magnesium oxide added and dissolved. The sodium carbonate should next be added in successive small quantities, allowing effervescence to die down before adding the next quantity. The solution is well boiled to remove carbon dioxide and adjusted to its final volume after cooling. It is filtered, packed in its final containers and sterilised by heating in an autoclave for 30 minutes at 10 lb. pressure. Overheating should be avoided as charring may occur.

Solutions which have been stored for six months in litre Vena flasks show no change in appearance or in pH value, which would indicate that the solution is stable under normal storage

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(From the Pharmaceutical Department. Cardiff Royal Infirmary)

<sup>\*</sup>Reprinted from The Pharmaceutical Journal (London), August 14, 1948, p. 111.

# Some Experimental Applications of

### **Pharmaceutical Preservatives**

By Bess Babibbo & Leo F. Godley New York University Clinic New York City

The preservatives with which we are particularly concerned here are those which are used in the preservation of parenteral medication and collyria. The most desirable preservative for a given preparation is a pharmaceutical responsibility requiring much thought and often much research. The ideal preservative has been defined as one which has a maximum antibacterial effect and a low toxicity index. Since both bacteria and the body tissues are essentially of the same chemical make-up, it is obvious that this requirement is difficult to achieve. Among other requirements, none the less important, are such things as compatibility, both physical and chemical; for even if the preservative completely inhibits: bacterial activity, the purpose is defeated if its addition produces undue tissue irritation or an alteration of the therapeutic effect of the medication. The problems of taste and odor imparted by preservatives, although an important consideration in oral medication, are not considered in our discussion.

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### MECHANISM OF ANTIBACTERIAL ACTION

The bacterial cell depends for its life on factors which maintain its protoplasm in a reactive state. This is determined by a continuation of the normal chemical composition and maintenance of colloidal elements in a state of equilibrium. Interference with these factors is incompatible with life. Advantage is taken of these points in effecting the death of the bacterial cell or the inhibition of its growth.

Bacteria are known to be electronegative particles. Cationic antiseptics (quaternary ammonium compounds) act by combining with certain essential acidic groups of the bacterial protoplasm to form nonionized complexes. These essential ions, which are probably nucleic acid, are thus immobilized, consequently rendering the bacterial cell incapable of conducting life processes. These cationic antiseptics are also surface tension depressants, hence detergent. This property helps to effect availability of the antiseptic to bacterial population more quickly. The efficiency of the antiseptic therefore increases as surface tension decreases.

### BACTERIOSTATIC vs BACTERICIDAL PROPERTIES

Bacteriostasis means a condition of immobility or inactivity of bacteria. Conditions which render bacteria inactive and thereby prevent multiplication are termed "bacteriostatic". Substances which are bacteriostatic under some conditions may become bactericidal when conditions are prolonged or altered. Therefore, bacteriostasis is a function of a given set of conditions.

The evaluation of an antibacterial agent has become complicated because of the necessity of distinguishing between bacteriostatic and bactericidal effects of a preservative. With the older less potent phenolic compounds, simple dilution was the practical means of distinguishing between the two actions. With substances which are bacteriostatic in high dilutions, however, this method has become impractical. One means of coping with this problem in the case of quaternary ammonium salts, at least, is the utilization of a certain subculture medium which effectively neutralizes relatively high concentrations of these compounds.<sup>2</sup>

Several technics may be utilized in the determination of toxicity of preservatives or antiseptics. <sup>3</sup> The toxicity index according to one definition, is based on the ability of the agent to destroy the function of the white blood cell; and is therefore a figure which represents the ratio of the strength of the antiseptic required to destroy phagocytic activity to the strength required to kill the test organism.

### EXPERIMENTAL

One of the reasons for the interest in this subject was the existence of a preservative problem in our laboratory. It became necessary for us to prepare a sterile solution of sodium chloride the pH of which was adjusted to 7.4 with a phosphate buffer system. When the solution was sterilized with the recommended preservative, phenol, at 120°C, for 15 minutes, a definitely pronounced white precipitate was formed. Since there was no evidence of a

precipitate when the solution was sterilized without phenol, the phenol was considered the element pro-

ducing the incompatibility.

In order to escape the ordeal of aseptic packaging, it was decided that we utilize another preservative. The preservatives under consideration for this purpose were the following: phenol 0.5%, chlorobutanol 0.5%, and a mixture of methyl- and propylparahydroxy-benzoates 0.04%. Both of the latter preservatives gave clear solutions after sterilization with the buffered saline. Solutions of these three preservatives were prepared in normal saline and sterilized for intradermal skin testing. A sterile unpreserved normal saline solution was used as a control. The vials were marked in code that the tester would not be hampered with a psychological impediment in his interpretation of results.

The testing and interpreting were done by trained allergists on known allergic patients. One tenth of one cubic centimeter of each of the four solutions (including the control) was injected intradermally in each of 14 patients. The results were as follows:

Chlorobutanol ----- 6 reactions Phenol ----- 4 reactions Parabens ----- 2 reactions Saline (control) ----- 2 reactions

These results are inconclusive to the extent that there should have been no reactions to the control solution; and further, it is thought that a larger group of subjects is indicated including both allergic and nonallergic individuals. It was decided, however, partly on the basis of this experiment to utilize the parabens as the preservative in the buffered saline solution. After six months' use of the parabens preserved solution, it has proved entirely satisfactory both from a therapeutic and pharmaceutical standpoint. Bacteriological tests have been conducted on samples of this solution that have been opened repeatedly over long periods of time; and cultures have been consistently free of growth.

Comparative studies of the bacterial inhibition of the above mentioned preservatives are under way in our laboratory and will be reported later.

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It was noted that solutions of procaine hydrochloride for injection that were prepared using phenol 0.5% as a preservative were quite colored after sterilization in 20 cc penicillin vials for 10 minutes at 120°C. A series of procaine hydrochloride solutions isotonic with sodium chloride were prepared using phenol 0.5%, chlorobutanol 0.5%, and parabens 0.04%. These solutions were sterilized along with an unpreserved solution in the same load under the above conditions. The results in color change were as follows:

|     | degree   | OI | color |  |
|-----|----------|----|-------|--|
| HC1 | Solution |    | +     |  |
| ICI | Colution |    |       |  |

Unpreserved procaine H Parabens + procaine HCl Solution procaine HCl Solution +++ " Solution colorless Chlorobutanol + "

From this test, it would appear that chlorobutanol exerts antioxidant properties in addition to a bacteriostatic effect. No antioxidant was used in the preparation of these solutions. These tests have been repeated in our laboratory with consistent re-

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Preservatives for collyria present a different set of requisites from those of parenteral solutions. Phenol and chlorobutanol are too irritating to be considered. We chose to do a limited study on the normal eye using sterile sodium chloride solutions made isotonic with the lacrimal fluid (1.4%) that were preserved with parabens 0.04% and benzalkonium chloride 1:5000. An unpreserved solution was used as a control. One drop of each solution was placed in the nasal angle of the eye of 15 subjects. There was an untimed rest interval between drops and the subject was asked to report any sensation experienced. Only subjective results were obtained; no attempt was made to collect objective information. The normal saline (1.4%) solution produced no uncomfortable sensation. The benzalkonium chloride solution was comfortable to all except one subject who reported a slight burning. The parabens preserved solution produced a slight burning sensation in all except one subject.

### SUMMARY

The foregoing experiments show simply that the ideal preservative is not so easily achieved. It is hoped that this paper will help to urge pharmacists to try to solve some of their departmental problems by experiment. We as pharmacists can do much to clarify these problems which have in many instances apparently become tradition to accept to the extent that often the problem has lost its challenge.

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### ISO-OSMOTIC SOLUTIONS\*

### OUT OF DATE IDEAS, AND NEW POINTS OF VIEW

By DAVID TRAIN, M.C., B.Pharm., Ph.C.

RECENT contribution from the Danish Pharmacopæia Commission supplies data' of fundamental importance to all concerned in the preparation of isotonic solutions. This painstaking work has been performed by K. Pedersen-Bjergaard, Ph.D., head pharmacist of Bispebjerg Hospital, Copenhagen, and his assistants during the period 1942-45. They have provided information which will enable solutions of simple or mixed substances to be prepared more accurately iso-osmotic with body fluids than has been possible in the past.

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The whole work is based on the assumption that solutions producing the same allineation in vapour pressure or depression of freezing point when compared with pure water exert the same osmotic pressure. In the main, C. V. Hill's thermoelectric method (with modifications) was used to determine the lowering of vapour pressure caused by given solutions, by comparison with known solutions of sodium chloride of which the freezing point depression had been accurately determined. With the freezing point depression determinations of solutions of sodium chloride allowance has been made for the amount of water which separates as pure ice on cooling, before the solution freezes as a whole. The fundamental basis of variation of concentration with freezing point was investigated and the results corrected by a double system of logarithmic co-ordinates. This allowed straight line relationships to be obtained, plotting only a few points, so giving correct values for an adequate range of concentrations. But to make the graphs of practical use, after the straight line had been drawn in the logarithmic system, and its equation calculated, it was transferred to the arithmetical system with sufficient points to enable a more or less arched curve to be drawn accurately.

By following this procedure variations caused by the change of activity of the substance are automatically accounted for in the experimental results, and this is shown in the comparisons the workers make between the experimentally found, and theoretically calculated values for each substance at the various concentrations. As far as possible all results have been compared with data given by other workers and reference books in this field. In two instances, zinc sulphate and sodium citrate, the determinations were made by both methods and the results show complete agreement over the whole range of concentrations, thus confirming the sound basis of the method used.

### ISO-OSMOTIC CONCENTRATION OF SODIUM CHLORIDE

Although reported elsewhere2, the same team of workers checked, by the vapour pressure method, the equivalent concentration of sodium chloride to be iso-osmotic with (a) blood serum; (b) lachrymal secretion.

Their results on ten individuals are of great interest, and are given in Table I.

|         |         | Osmotic concr | onen. equivnt. in % of NaCl |  |
|---------|---------|---------------|-----------------------------|--|
| Sex     | Age     | Serum         | Lachrymal<br>Secretion      |  |
| Man 1   | 41      | 0.89          | 0.89                        |  |
| ,, 2    | . 30    | 0.89          | 0.92                        |  |
| " 3     | . 32    | 0.87          | 0.90                        |  |
| ,, 4    | . 32    | 0.88          | 0.88                        |  |
| _,, 5   | . 28    | 0.87          | 0.89                        |  |
| Woman 1 | . 41    | 0.85          | 0.89                        |  |
| n 2     | . 31    | 0.81          | 0.87                        |  |
| » 3     | . 33    | 0.88          | 0.92                        |  |
| n 4     | . 30    | 0.85          | 0.90                        |  |
| n 5     | . 29    | 0.85          | 0.90                        |  |
|         | Average | 0.86          | 0.90                        |  |

Conclusions to be drawn from this table are: -

(1) Lachrymal secretion is isa-osmotic with blood serum, i.e., equivalent to 0.9 per cent. solution of NaCl and not 1.4 per cent. as has generally been accepted up to the present.

(2) The slightly higher concentration of the lachrymal secretion compared with that of serum in each subject is probably due to evaporation on the eye surface.

A second series of experiments was designed to discover the limits of concentration of sodium chloride to which the eye could be subjected without feeling undue pain. These results are given in Table II

| Strength-% NaCl                        | Reaction  |
|--|---|
| 2·0<br>1·5<br>1·3<br>1·2<br>0·8<br>0·6 | very disagreeable after ½ min. somewhat disagreeable after 1 min. perceptibly disagreeable after 1 min. completely indifferent after a long time. perceptibly disagreeable after 1 min. |

Thus it would seem that the eye is relatively insensitive to differences in concentration within a range of 0.6-1.5 per cent. NaCl unless these solutions are applied for any length of time.

The authors point out that the figure of 1.4 per cent NaCl was first introduced to pharmaceutical literature by the Pharmacopæia Helvetica 1933 based on the work of Lumière and Chevrotier.2 This work was not checked before publication in the Swiss Pharmacopæia from which it has since been indiscriminately reprinted in various works of reference including the British Pharmaceutical Codex 1934. In fairness to Lumière and Chevrotier, it must be stated that they sought to emphasise the risk of hypo-osmotic solutions with all body fluids including blood serum. Further, they did not publish their methods, and it is probable that they made only rough lists with solutions in contact with the eye, similar to those in table 2, in which case (remembering that they were anxious to avoid hypo-osmotic concentrations) it will be seen that the 1.4 per cent. figure is within the tolerance values found by the present authors.

By allowing for the disengaged ice, in determining the freezing point depression by physiological saline, the authors have given a corrected value of 0.52° C. as against 0.56° C., and the value given in the B.P.C. 1934 and calculated according to Raoult's law. Furthermore, this correction agrees with the value found by Warburg, 1937, who also allowed for the disengaged

### PRESENTATION OF RESULTS

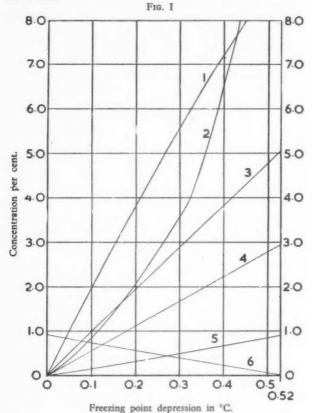
The authors have investigated many substances likely to be used in solutions for the eyes, and for the external and internal treatment of body tissues. They have supplied graphs showing in each case:-

- (1) The values calculated assuming Raoult's law to hold good.
  - (2) The values found experimentally.
- (3) The values found experimentally placed with a "mirrored" sodium chloride curve (or in certain cases a mirrored potassium nitrate curve for silver salts), to facilitate a rapid determination of the amount of sodium chloride necessary to produce an iso-osmotic solution.

Comparison between values (1) and (2) shows that there is hardly ever agreement between the calculated and experimentally found values. As mentioned earlier this is due to the activity of the solutions and this figure includes not only the degree of dissociation to which the substance ionizes, but also the auxiliary factor, which expresses the extent to which the ions and molecules, by mutual interference, cause departure from

<sup>\*</sup>Reprinted from The Pharmaceutical Journal (London), December 20, 1947, p. 449.

"ideal" solution behaviour. Up to the present time this latter-factor has only vaguely been accounted for and has often been ignored in the calculation of iso-osmotic solutions, because it does not lend itself to easy tabulation, and, therefore, the appropriate corrections to be applied have not been available for general use. Thus it is found that hexamine, sucrose and lactose have an activity greater than 1, an activity which tends to increase with concentration in the case of the two sugars. This variation would never have been accounted for on the ground of degree of dissociation as none of these substances forms ions.



1. Sucrose
2. Amethocaine hydrochloride
3. Glucose
4. Urethane
5. Sodium chloride
6. "Mirrored" sodium chloride curve

Key to Curves

When the curves are drawn on arithmetical co-ordinates (as in Fig. I) substances with a constant activity have a straight line (urethane), those which have an activity which decreases with increase of concentration have a concave curve (sodium chloride), whereas those with an activity which increases with concentration have a convex curve (sucrose and glucose). A substance which changes its activity at a certain concentration shows a sudden bend in the curve (amethocaine hydrochloride at 3·7 per cent.).

### PRACTICAL USE OF THE GRAPHS

The graphs presenting the third set of values will be of most interest from a practical point of view. The curves depicted have been based on experimental determinations and so incorporate the necessary activity coefficient. Fig. I is a representation of four such curves, and illustrates the method by which the necessary amount of sodium chloride can be found which will make the solution iso-osmotic.

For instance, suppose a solution containing 3.5 per cent, of glucose is to be prepared so that it is iso-osmotic with blood. It will be seen that a 3.5 per cent, solution of glucose (anhydrous) produces a freezing point depression of  $0.36^{\circ}$  C. The amount of sodium chloride which is then to be added must give a depression of  $0.52-0.36=0.16^{\circ}$  C, which is seen to correspond

to 0.26 per cent. sodium chloride; i.e., 3.5 per cent. of anhydrous glucose + 0.26 per cent. sodium chloride makes an iso-osmotic solution.

By drawing a "mirrored" or reversed sodium chloride curve this procedure may be simplified as shown in Fig. II.

Start from the point on the ordinate corresponding to the concentration of the medicament (a); now travel horizontally until this concentration cuts the medicament curve (b); then travel vertically upwards or downwards (downwards in this case) until the "mirrored" sodium chloride curve is reached (c); the concentration (d) corresponding to this point is the amount of sodium chloride necessary to produce an iso-osmotic solution.

A little practice by the reader will convince him of the utility of this method, and the following examples are given for him to test how easy it is:—

0.5% Amethocain. Hydrochlor. needs 0.79% NaCl (move upwards b-c) 3.0% Amethocain. Hydrochlor. needs 0.44% Na Cl (move downwards b-c) 6-c) 1.0% Glucose needs 0.72% NaCl (move downwards b-c)

The authors have a comment on the accuracy of the method. Fourteen test solutions were made up using data from the graphs and checked experimentally for being iso-osmotic with physiological saline. It was found that the test solutions were, on an average, hypo-osmotic to an extent corresponding to 0.03 per cent. sodium chloride, the most unsatisfactory solution being 0.06 per cent.

### SUBSTANCES USED IN EYE PREPARATIONS

Twenty-eight substances of use in current Danish practice in ophthalmic formulæ have been examined and the practical curves drawn. Of these substances, nineteen are to be found in prescriptions in a British ophthalmic formulary dated 1943 and most of them are official substances. All concentrations given as iso-osmotic with lachrymal secretion naturally differ from figures given in the B.P.C., which are based on an equivalent of 1.4 per cent. sodium chloride. Discrepancies in freezing point depressions are pointed out. For instance, a 1 per cent. solution of cocaine hydrochloride is stated in the B.P.C. to cause a depression of 0.12° C., whereas the authors of this paper find it causes a depression of only 0.09° C.—a figure 25 per cent. lower.

An interesting fact was brought out in the investigation of boric acid. A freshly prepared solution made without the application of heat has a somewhat greater freezing point depression than after the heat treatment, e.g., (a) a freshly prepared solution of 2.85 per cent. and (b) a 3.1 per cent. solution sterilised under pressure both show the same freezing point depression of 0.82° C.

It is unfortunate that Danish and British practice differ in the choice of the acid radicle for pilocarpine, hence the curve in the graphs is given for pilocarpine hydrochloride (the B.P. uses the nitrate). There seems to be no means of deciding whether the activities of the two salts are the same or whether they differ, so that these values cannot be adapted for use in this country with pilocarpine nitrate.

The official Danish ophthalmic preparations are discussed and formulæ proposed to make all of them iso-osmotic with tears. With boric acid-borax eye lotion it is emphasised that pH is as important a factor as isotonicity, and the preparation should be about pH 7.35. Where a lotion is required to fix the natural acidity of a diseased eye, it should not be made more alkaline, but should be buffered at this figure. Such a solution can be obtained by using 0.25 per cent. borax and 1.75 per cent. boric acid and sterilising by heating in the autoclave.

### SUBSTANCES FOR INJECTION AND LOCAL TREATMENT OF TISSUES

Under this heading 67 substances have been examined, and of these, 58 are to be found in the B.P. 1932, and B.P.C. 1934, and their Addenda. Among them are curves for alcohol, glycerin and phenol. Discrepancies are pointed out, the more important differences from B.P.C. figures being:—

(1) The strength of sodium bicarbonate iso-osmotic with blood serum is 1.4 instead of 1.35 per cent.

(2) The strength of calcium chloride iso-osmotic with blood serum is 2.5 instead of 2.33 per cent.

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(3) The freezing point depression produced by 1 per cent. procaine hydrochloride is  $0\cdot122^\circ$  C., instead of  $0\cdot14^\circ$  C.

(4) The freezing point depression produced by 1 per cent. sodium benzoate is 0.23° C. instead of 0.31° C.

(5) The freezing point depression produced by 1 per cent. emetine hydrochloride is 0·062° C. instead of 0·088° C.

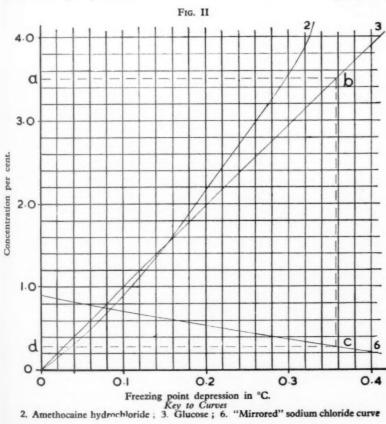
(6) The freezing point depression produced by 1 per cent. morphine hydrochloride is 0.086° C. instead of 0.096° C.

The salt used for strychnine is the nitrate, so the values supplied will be of little use in British practice in which the hydrochloride is widely employed.

It is a pity that the authors were only able to supply a curve for calcium gluconate up to 3 per cent., for in British practice strengths of 10 and 20 per cent. are often used, and it would have been valuable to have known exactly what depression these concentrations produce.

Warning is given that although certain substances may be made iso-osmotic with blood serum, they may still cause hæmolysis of the blood corpuscles because they can penetrate the lipoia membrane. Boric acid, hexamine and urethane are three such substances which have been investigated and their curves plotted.

Official Danish injections are reviewed and suggestions made for suitable additions to be made to hypo-osmotic injections, With hyper-osmotic solutions it is realised that often it is not practicable on therapeutic grounds to make them weaker and they must, of necessity, remain the same. Official solutions for local application are also reviewed, and in the main they are strongly hypo-osmotic. The authors report an incident at their hospital where the local application of 0.1 per cent, chloramine was ordered, and when applied this caused the patient intense pain; when 0.9 per cent. of sodium chloride was added the pain was completely relieved.



### COMMENTS

The whole work shows much care, forethought, research and diligent application, with the sole idea of obtaining correct and reliable results which are fundamentally sound. Figures have been obtained for new substances where none previously existed, familiar substances have been reinvestigated, and inaccuracies in our present knowledge brought to light.

EYE PREPARATIONS.-It would be well if the equivalent isoosmotic figure of 1.4 per cent, sodium chloride were banished as rapidly as possible, revealing plainly the fact that tears, blood serum and 0.9 per cent, of sodium chloride are all iso-osmotic with each other. In considering what is required of an eye preparation, it should always be borne in mind that the prescriber usually orders lotions or drops to have a certain effect. This effect may be completely upset if these solutions are irritant or painful, so producing a flow of tears. For example, where only one eye drop is to be instilled the production of one tear dilutes the solution roughly 50 per cent., whereas if a copious flow of tears is produced, the net effect of the drop may be negligible. Thus solutions should be as bland as possible, and this can be done by: (a) Making them iso-osmotic with lachrymal secretion; (b) adjusting as near as possible to pH 7.0; (c) instructing the patient to warm the solution before use.

The difficulty in obtaining iso-osmotic solutions is largely eliminated by the information provided by this treatise, and the hope may be expressed that someone will eventually provide a complementary system applying to pH. This is a much more difficult task, but it should be tackled now that real efforts are being made to replace, wherever possible, empirical methods with easy-to-use exact data. It is also to be hoped that any official formulæ will be examined for these two conditions and amended if necessary.

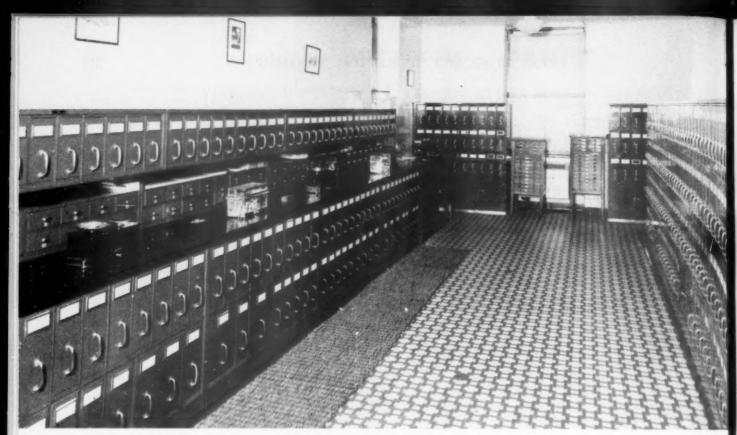
INJECTIONS AND TISSUE SOLUTIONS .- With injections the importance of iso-osmotic conditions and pH has been confirmed many times, but the care in these matters with regard to tissue solutions has not received the same emphasis. The basic principle here is to supply medicaments in a form that will produce

the desired therapeutic effect with the least discomfort to the patient. This applies particularly to areas of tissue where the natural protective membrane has been removed, thus exposing large numbers of sensitive nerve endings. Therefore pharmacists should be on the alert, especially in hospitals, for reports of pain following the application of solutions, and they should always check up whether the patient's distress can be partially or completely relieved by the simple adjustment of osmotic pressure or suitable buffering. Here again it would be wise if official formulæ were examined to ensure that they comply to an iso-osmotic concentration and a suitable pH.

CONCLUSION.—As the results of the work of this Danish team are of such practical use, it would be of great help if the graphs for the medicaments used in this country could be published in one of our standard works of reference so that they would be instantly available for use whenever required. When this is done it must be remembered that in this treatise all percentage solutions have been given w/w, whereas British practice is w/v.

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**Prescription Department** 

## Pharmacy Department CHARITY HOSPITAL, New Orleans

By Valerie Armbruster Chief Pharmacist

The imposing edifice of Charity Hospital of Louisiana had its meager beginning in 1736 from money willed for the purpose of caring for the sick of the City of New Orleans by a sailor, Jean Louis. Many changes have occurred since that time.

In 1786 the hospital had a capacity of 24 beds in relation to the City's population of 9,756.

A new hospital was erected in 1815 and subsequent changes have occurred to improve the institution.

The present building, erected in a city of over a half-million people, was completed in 1939 and is the second largest single unit hospital in the United States, with a bed capacity of 3,300. It is a city within a city.

Charity Hospital is a teaching institution for Tulane and Louisiana State University Medical Schools and maintains its own School of Nursing.

The Pharmacy department is located in a prominent position on the sixth floor, center front, and occupies a floor space of approximately 9,000 square feet.

The department includes two storage rooms, a tablet room, entrance and service room, prescription department, manufacturing laboratory, small sterile solution room, sterile solution department, cold storage room, and two offices. There is tileflooring throughout the department.

Personnel consists of six full-time and one parttime pharmacists, eight laboratory helpers, five custodial workers, one clerk and one typist-clerk.

The Pharmacy is maintained only for the actual bed patients of the hospital and fills no out-patient prescriptions. The prescription department has three pharmacists whose daily duties include filling an average of 250 special prescriptions and 25 narcotic orders as well as preparing intravenous solution of Sodium Sulfadiazine daily and maintaining the stock preparations of sterile solutions of narcotics, sodium phenobarbital, thiamin hydrochloride, and Stearns'droppers of eye medications. This department has an elevator by which prescriptions are sent to the Central Supply depots on each floor. From there, drugs are then distributed to the wards

The tablet room contains a tablet machine, a mixer, a granulator, and a steam kettle. During one month, the total manufacture is approximately three hundred thousand assorted tablets and a hundred lbs. of Starch Lactose Granulation.

In the manufacturing laboratory there is a colloid mill, ointment mill, tube filling machine, large copper percolator, four 30 gallon mixing tanks, an Ertel asbestos filter machine, and sufficient metal cabinet space to accomodate bulk drugs and chemicals. Two pharmacists are on duty and are responsible for the ultimate efficiency of this department.

The Pharmacy department manufactures all the intravenous solutions which includes 10,000 liters of assorted solutions per month. The equipment in this department consists of an autoclave, a Barnstead Water

Still, and purity meter for checking the distilled water, one 100 gallon and one 150 gallon water storage tanks, a bottle - filling apparatus, two stainless steel washing tubs, a 100 gallon glass lined mixing tank with propellor, a bottle brushing machine, and an apparatus for rinsing bottles with distilled water.

An up-to-date and complete pharmaceutical library and literature file is maintained for the use of the Pharmacy as well as the medical staff.

The principal object of the department is to give the best service possible and to practice economy only when quality will not suffer.

The good-will that exists between the Pharmacy and the other departments of the Hospital is a valued asset which is carefully guarded.

Sterile Solutions Room



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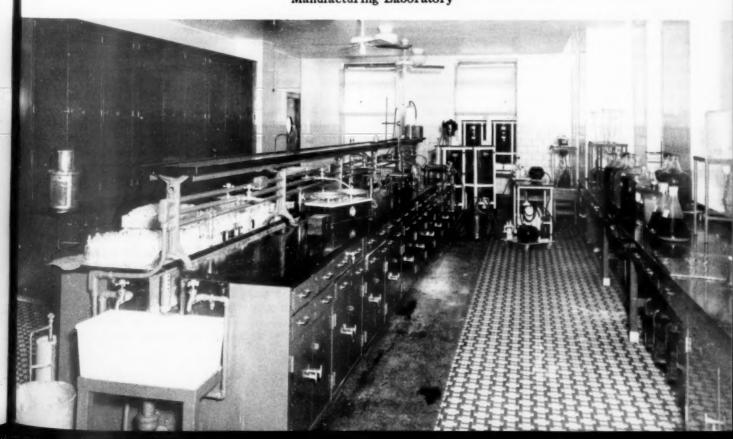
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Tablet Manufacturing Room



Manufacturing Laboratory



# Therapeutic Trends



New Trends in Medicine and Pharmacy
Include DIATRIN - GAMMEXANE TO
TREAT SCABIES - PHENOSULFAZOLE PERIVITIN - AUREOMYCIN

### GAMMEXANE USED TO TREAT SCABIES

Experimental studies using a new antiscabetic agent, the gamma isomer of hexachlorocyclohexane (Gammexane) are reported in The Journal of Investigative Dermatology (May 1948). Earlier investigations showed this chemical to be useful against insects and other pests, and the report states that it equals or is more efficient than DDT.

Using a one percent ointment in a vanishing cream base, a group of 33 patients were instructed to take a hot, soapy bath after which they were to apply two ounces of the ointment to all areas of the body below the chin and, after twenty-four hours, to take a second hot soapy bath and put on freshly laundered or dry-cleaned clothes. Another group of 39 patients applied only a single ounce of the ointment after the first bath, then applied the remainder twelve hours later. Patients showing secondary infection were given a bland lotion to apply twice daily following the completion of their treatment.

Patients were seen after one or two weeks and sometimes at the end of the third week and of the 72 patients treated, 69 were cured with a single twenty-four hour period of treatment. Only three patients had relapses, one of which was cured with a second course of the ointment. The remaining two were not treated with Gammexane.

Of the two methods used in the treatment, neither seemed to make a difference in the percentage cure and the patients having a secondary infection were cured as readily as those without infection. Absence of irritation offers another advantage in using Gammexane.

The ointment for experimental use was supplied by the Commercial Solvents Corporation and marketed as "Kwell" ointment.

### PERIVITIN

Perivitin is a new German Drug which was recently reported by the Office of Technical Services of the Department of Commerce. Similar to adrenaline and benzedrine, a survey of the German reports from 1938 to 1944 indicate that Perivitin may prove useful for fighting post-operative collapse, for prolonging the analeptic effect of morphine, and for relieving symptoms of hay-fever and asthma and the after-effects of x-ray therapy. The drug may also prove useful in releasing symptoms of psychical inhibition in psychiatric clinic tests.

The report points out that attention must always be paid to addiction problems similar to those encountered with morphine and cocaine.

Copies of the complete report on Perivitin (PB-88826) are available for twenty-five cents from the Office of Technical Services, Department of Commerce, Washington 25, D. C.

### DIATRIN - NEW ANTIHISTAMINIC

Pharmacological studies on a new antihistaminic known as Diatrin show that this drug is tolerated better than other antihistamines in all animal species experimented upon. Clinical studies (to be published) also show that this compound possesses high tolerance in man.

A comparative study using Diatrin, Pyribenzamine, W-53 (an analogue of Antergan), Neo-Antergan and Benadryl was made on guinea pigs, mice, rats, rabbits, dogs and cats and reported in The Journal of Pharmacology and Experimental Therapeutics (June 1948). In this experimental work, studies were made to determine: (1) the activity of antishistamines against intravenous lethel histamine doses in guinea pigs; (2) the protective activity of Diatrin against lethal histamine asthma; (3) the effect of Diatrin on histamine hypotension; and (4) the therapeutic activity of Diatrin in anaphylactic shock of guinea pigs. Depending upon the route of administration the average lethal dose of

this drug is  $1\frac{1}{2}$  - 4 times higher than that of five other antihistaminics investigated. Toxicity studies showed that Diatrin is relatively non-toxic and pathological changes in the liver and brain were observed only when extremely high, acutely toxic doses of this--or of the other antihistaminics--were administered repeatedly.

Chemically Diatrin is N,N'-dimethyl-N'-phenyl N'-(2 thienylmethyl) ethylenediamine hydrochloride. It is an analogue of Antergan and of W-53, another thenyl derivative which already has been reported to possess definite antihistamic properties.

### PHENOSULFAZOLE HALTS POLIO VIRUS

Phenosulfazole is a new sulfa drug found effective in halting a polio virus in mice. Reporting in a recent issue of the Texas Reports on Biology and Medicine (Vol.6), it is pointed out that phenosulfazole brought about three types of results when given to mice which had been experimentally infected with the polio virus: it cured mice in the early stages of the disease; the mice that survived were immune to reinfection; and when the drug was given in a single dose orally, it prevented infection.

Phenosulfazole, also known as Darvisul, is one of the sulfonamides which was synthesized at the Calco Chemical Division in a search for compounds which might have possible activity against an experimentally induced infection with a strain of western equine encephalomyelitis virus. In an effort to evaluate phenosulfazole, experimental studies on mice were carried out at Columbia University College of Physicians and Surgeons and at Lederle Laboratories. This drug is a white powder not readily soluble in water. Since it was noted that the powder was not sufficiently absorbed by the body of the animal, a sodium salt of the drug was prepared. This salt proved to be soluble, nontoxic and generally satisfactory as an injectable material No ill effects were noted when phenosul fazole was given to mice, although heavy doses were given.

According to these early studies, phenosulfazole is effective in a mouse against as many as 100 times the lethal dose of poliomyelitis virus when injected 24 hours after the virus is introduced.

The compound does not act directly on the mouse virus but appears to react on the tissue cell itself.

Since this is the first time a virus disease has been successfully attacked by a drug, clinical studies to determine the value of this antiviral synthetic on humans are being carried out. Tests on human patients suffering from poliomyelitis are being made at five hospitals including Columbia University College of Physicians and Surgeons where the original research was done. When these tests are completed, it will be possible to evaluate phenosulfazole for the treatment of polio.

### NEW ANTIBACTERIAL AGENT

Aureomycin, a new antibacterial agent extracted from a soil mold, has been successfully used to treat certain infections which do not respond to either penicillin or streptomycin. Early reports on the preliminary clinical trials using aureomycin were presented at a recent conference of the sec tion on biology of the New York Academy of Sciences. An abstract of these reports appears in the Journal of the American Medical Association (September 11, 1948). To date, Aureomycin has been used successfully against lymphogranuloma venereum and influenzal conjunctivitis. It has been reported that it is effective in all staphylococcal infections if used for several days. Test tube experiments indicated it is more effective against tuberculosis bacillus than is streptomycin.

Developed at the Lederle Laboratories, aureomycin is now being used experimentally at Columbia University and Harlem Hospitals in New York City, the Johns Hopkins University School of Medicine and others.

Auromycin is supplied as a yellow crystalline hydrochloride salt which is soluble in distilled water but somewhat less soluble in isotonic sodium chloride solutions. These solutions are acid (pH 4.5). The activity of the antibiotic deteriorates rapidly in alkaline solution at room temperature.

Toxicity studies on rats and dogs showed that this antibiotic is tolerated with moderate local reaction and some loss of weight associated with anorexia. When a one percent solution of Aureomycin borate was instilled locally into the eye of a rabbit, no delayed or immediate reactions were noted.

Patients suffering from Rocky Mountain spotted fever, infections of the urinary tract due to Escherichia coli, brucellosis and typhoid were treated with Aureomycin with favorable results. Administered locally and intramuscularly, a dose of 3 mg. per kg. of body weight per day given IM was tolerated but with signs of local irritation. The oral dosage employed varied from 10 to 60 mg. per kg. of body weight per day, given in six to twelve doses.

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# CURRENT LITERATURE-

### AMERICAN PROFESSIONAL PHARMACIST

May, 1948 - "The Survey of Hospital Pharmacy". A continuation of The Hospital Pharmacy Survey started in the April issue. Includes the results of data on: records, reports, financial statements and inventory.

page 448

June, 1948 - "Therapy and Service in Hospital Pharmacies". Still a continuation of the Survey. This section includes: charges, formulary, therapeutics committee, sterile products, equipment, facilities, and hours of service.

page 544

July, 1948 - "Hospital Pharmacy and the Pharmaceutical Survey". The data obtained by the questionnaire forms of the survey were tabulated by "The Pharmaceutical Survey". Complete tables of analysis of the "Hospital Pharmacy Survey 1948" are presented.

page 636

August, 1948 - "Pharmaceutical Practice in Hospitals". Concluding the presentation of the review of pharmaceutical practice in hospitals as reported to the "Hospital Pharmacy Survey" conducted by the journal. The role of the pharmacist is analyzed.

page 726

### HOSPITAL MANAGEMENT

May, 1948 - "Albert P. Lauve, President-Elect of Southeastern Pharmacists". A very pertinent, complete and interesting report of the Biloxi, Miss. Southeastern Hospital Pharmacy meeting. Excellent summaries of papers presented are included.

page 92

June, 1948 - "Education of Hospital Pharmacists".-George DeKay of the School of Pharmacy at Purdue University tells of some changes which should be made in the practice of pharmacy in hospitals.

page 86

July, 1948 - "File on Pharmaceuticals Aids Professional Staff" by Rose M. DeWever, R.N. A nurse describes several methods a pharmacist may use in offering professional service to the nursing personnel especially in connection with new drug developments.

page 84

"The Place of Pharmacy in the Army Medical Department" by Major General R. W. Bliss. An address - describing the exact position of pharmacy in the medical service corps.

page 86

September, 1948 - "Orientation Course in Hospital Pharmacy" by C. Lee Huyck. A comparison of the "Outline of the Course in Hospital Pharmacy" which is being offered at the Howard College of Pharmacy, Birmingham, Alabama.

page 90

### MODERN HOSPITAL

June, 1948 - "Treatment of Periodic and Common Headaches" by C. C. Pfeiffer, M.D. A complete presentation of the cause of headache, differential diagnosis, and therapy.

page 88

July, 1948 - "Polyhydric Alcohols in Modern Medicine" by Daniel A. Lang. Describes the uses of glycerol, propylene glycol, ethylene glycol and its polymers. Toxicology and treatment of ethylene glycol is described. Use of triethylene glycol in the sterilization of air described.

page 90

### SOUTHERN HOSPITALS

June, 1948 - "Increasing Net Profit in Hospital Pharmacy" by Martha Coffield. Reprinted in THE BULLETIN, May-June, 1948.

page 105

July, 1948 - "Establishing a Pharmacy Committee" by Johnnie Crotwell. Definition of such a (continued on page 219) Current Literature (continued from page 218)

committee, its place in the hospital, its functions and desirability. From a paper read before the April meeting of the Southeastern Hospital Pharmacists Association.

page 70

August, 1948 - "Basic Drug Charges" - System installed at North Carolina Baptist Hospital. Lists

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types of drugs for which charges should be made.
page 62

September, 1948 - "The Control of Narcotics at One Southern Hospital" by Valerie Armbruster. A paper presented at the Southeastern Hospital Pharmacists Association meeting in Biloxi, Miss. in April. The use of station services for a unit of wards in controlling the distribution, control and accounting for narcotics is described.

page 96

# POSITIONS in hospital pharmacy

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NORTH CAROLINA. . . Small general hospital in Southwestern North Carolina is opening a pharmacy in connection with hospital and out-patient department and is seeking a pharmacist registered in, or eligible for registration in North Carolina. Steam heated brick home available for immediate occupancy. Excellent opportunity for pharmacist seeking permanent position. For additional information, write to W. D. Owens, Jr., Administrator, Valdese General Hospital, Valdese, N. C.

VETERANS ADMINISTRATION. . . There are now vacancies for pharmacists in the Veterans Administration hospitals and regional offices in all parts of the country. For additional information, see page 221 of this issue of THE BULLETIN.

SOUTH DAKOTA. . . Pharmacist Wanted - 204 bed general hospital, 8 hour day, one day off each week. Write Superintendent, McKennan Hospital, Sioux Falls, South Dakota.

VIRGINIA. . . Position as Assistant Pharmacist open at Norfolk General Hospital. Salary begins at \$3600, 2 weeks vacation, 2 weeks sick leave, hospitalization insurance paid by the institution, meals furnished while working, and a 44 hour week. Norfolk General Hospital is a 320 bed institution with 55 bassinetts and an out-patient department. Male applicant preferred. For additional information, write to Norman Baker, chief pharmacist.

OHIO. . . Good opportunity available for a man 30 - 40 who can demonstrate marked professional ability in the development of new pharmaceutical products. Men with experience in the manufacture of tablets, ampuls, liquids, ointments, and related products will be given preference. Initial appraisal of respondent will be based on completness and content of resume of academic training, scope of experience, and evidence of possessing qualities as a leader. Position has good future with large midwestern pharmaceutical firm. Send your letter of application to THE BULLETIN of the A. S. H. P., Positions 2B, University Hospital, Ann Arbor, Michigan. It will be forwarded at once to the advertiser.

OHIO. . . Position as staff pharmacist open at Aultman Hospital in Canton. Forty-four hour week, sick leave and vacation. Salary open. For further information, write to Personnel Director, Aultman Hospital, 625 Clarendon Avenue, S. W., Canton, Ohio.



EDITED BY EDDIE WOLFE, CHIEF PHARMACIST, MT. ALTO VETERANS HOSPITAL WASHINGTON, D.C.

### V. A. PHARMACISTS MEET AT SAN FRANCISCO A. PH. A. CONVENTION

The V. A. Pharmacists attending the recent A. Ph. A. Convention in San Francisco met on Tuesday evening, August 10, 1948 at an informal dinner and meeting. It afforded the men present the opportunity to meet their colleagues personally and to spend a very pleasant social evening together.

The honor guest of the occasion was Mr. E. Burns Geiger, Chief of Pharmacy Service for the Veterans Administration

Others attending were: Eddie Wolfe, Mr. Hayes, Charles Schwartz, John M. Gooch, Earny B. Mc-Clellan, Charles G. Towne, Frederic J. Press, Winford Suits, Otto Haueisen, Miss Beatrice Ross, Eldridge C. Ross, Victor P. Bruflat, Burr R. Cole, Louis Brodie, Carl S. Lerner, Henry W. Beard, and Miss Barbara Deligan.

### V. A. HOME TOWN PRESCRIPTION SERVICE PLAN

Pharmaceutical associations in 46 states, the District of Columbia and Hawaii renewed contracts with Veterans Administration to provide "hometown" prescription service for eligible veterans during the fiscal year ending June 30, 1949, E. Burns Geiger, chief of VA's pharmacy division, announced.

All states except Nevada and Virginia now are taking part in the drug program.

Under the "home-town" service plan, eligible veterans simply take their prescriptions to the nearest drug store to be filled, and VA pays the bill. Fees charged by participating pharmacies are approximately equivalent to average fees for presscriptions charged the general public.

To be eligible for the pharmacy service, a veteran must meet these two requirements:

1. He must be receiving medical treatment for a service-connected illness or disability.

2. He must obtain a prescription from a private physician, dentist or osteopathic physician operating under VA's "home-town" medical care program or on a fee basis.

Osteopathic physicians may write prescriptions for veterans only in those states where they are permitted to do so by law.

In addition to drugs, certain specified "medical requisites," such as insulin syringes and needles, atomizers, hot water bottles, fountain syringes, ice bags and feeding tubes, are available under the plan. These items may be prescribed only in cases of emergency.

The "home-town" pharmacy program, which was started in the Spring of 1946, was designed to reduce reported delays that arose when all prescriptions from fee-basis physicians had to be mailed to the nearest VA office and then sent to the veteran by mail.

The project was devloped by VA and representatives of the American Pharmaceutical Association and the National Association of Retail Druggists.

### PHARMACEUTICAL SHORT CUT

In the preparation of a Crude Coal Tar ointment, if the coal tar is first rubbed with an equal quantity of castor oil, a smooth, speckless ointment may be dispensed.

J. E. Birmingham Chief Pharmacist V. A. Regional Office Roanoke, Virginia



ASPINWALL VA HOSPITAL PRESENTS DRUG DISPLAY

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A professional drug display was presented at the Aspinwall VA Hospital, Aspinwall, Pennsylvania, by the Ciba Pharmaceutical Company. In attendance at the display were Mr. Statler, Chief Pharmacist and Mr. Helfand and Mr. Tallaricco, Pharmacists.

Many favorable comments were received from the Medical staff concerning the potentialities of such a display. The Nursing staff also responded in large numbers.

VACANCIES FOR PHARMACISTS IN VA

\* \* \* \* \* \*

A few vancancies exist for qualified pharmacists in Veterans Administration hospitals and regional offices in all parts of the country, E. Burns Geiger, chief of VA's pharmacy division, has announced.

Basic minimum qualifications for VA pharmacists are a baccalaureate degree, with a major in pharmacy, from an accredited college of pharmacy, and registration as a pharmacist in one of the states or in the District of Columbia.

No experience is required for positions as pharmacists at P-1 ratings (\$2,974.80 to \$3,727.20 a year). These positions offer opportunities in VA for recent college graduates who have completed their registration.

One year of professional experience is required for pharmacists at P-2 ratings (\$3,727.20 to \$4,479.60 a year).

Two years' experience is necessary to obtain P-3 positions (\$4,479.60 to \$5,232.00 a year).

Applicants will be placed in one of the three pay brackets, depending upon their education and experience.

Applications (Civil Service Forms 57) may be obtained from any Post Office, Civil Service office or VA personnel office.

The forms should be forwarded to the hospital or regional office in which applicants wish to serve, or to the VA branch office having jurisdiction over the VA stations.

Following are the branch offices and the states over which they have jurisdiction:

Branch Office No. 1, 55 Tremont Street, Boston 8, Massachusetts--Massachusetts, Connecticut, New Hampshire, Rhode Island, Maine, Vermont.

Branch Office No. 2, 346 Broadway, New York 13, New York-New York State and Puerto Rico.

Branch Office No. 3, 5000 Wissahickon Ávenue, Philadelphia 1, Pennsylvania--New Jersey, Pennsylvania, Delaware.

Branch Office No. 4, 900 N. Lombardy Street, Richmond 20, Virginia--Maryland, West Virginia, Virginia, North Carolina and District of Columbia.

Branch Office No. 5, Atlanta 3, Georgia, - - Georgia, South Carolina, Florida, Alabama and Tennessee.

Branch Office No. 6, 52 S. Starling Street, Columbus 8, Ohio--Ohio, Michigan, and Kentucky.

Branch Office No. 7, 17 N. Dearborn Street, Chicago 2, Illinois-Illinois, Indiana and Wisconsin.

Branch Office No. 8, Fort Snelling, St. Paul 11, Minnesota--Iowa, North Dakota, South Dakota, Nebraska and Minnesota.

Branch Office No. 9, 420 Locust Street, St. Louis 2, Missouri--Missouri, Arkansas, Oklahoma and Kansas.

Branch Office No. 10, 1114 Commerce Street, Dallas 2, Texas--Texas, Mississippi and Louisiana.

Branch Office No. 11, 821 Second Ave nu e, Seattle 4, Washington--Idaho, Montana, Oregon, Washington and Alaska.

Branch Office No. 12, 180 New Montgomery Street, San Francisco 5, California--California, Arizona, Nevada and Hawaii.

Branch Office No. 13, P.O. Box 1260, Denver Federal Center, Denver 1, Colorado--New Mexico, Wyoming, Colorado and Utah.



### HOSPITAL PHARMACISTS APPOINTED TO STATE BOARD

Recently appointed to the Louisiana State Board of Pharmacy are two hospital pharmacists, Mr. Albert Moore, Veterans Hospital, Alexandria and Mr. Herbert Mang, Ochsner Foundation, New Orleans.

### A.C.S. HOLDS ANNUAL CONFERENCE

The American College of Surgeons is holding its annual clinical congress in Los Angeles, October 18 to 22. Meeting in conjunction with this is the annual Hospital Standardization conference. Mr. Charles Hagan, Chief Pharmacist at Santa Monica Hospital will participate in a panel discussion at this meeting on "Evaluating the Various Departments and Services of the Hospital According to the Plan of the Point Rating System.

### OKLAHOMA STATE BOARD GETS OPINION ON STATUS OF HOSPITAL PHARMACIES

The Oklahoma State Board of Pharmacy has obtained an opinion in regard to the practice of pharmacy in hospitals. Accordingly, anyone compounding physicians' prescriptions must be a registered pharmacist or assistant pharmacist and must secure a license from the state board.

### POLICY COMMITTEE MEETS

The Policy Committee of the Division of Hospital Pharmacy will meet at A.Ph.A. headquart -

ers in Washington on October 23 and 24. A.S.H.P. representative on the committee include: Dr. W. Arthur Purdum as President of the A.S.H.P., Don E. Francke as editor of THE BULLETIN, and Leo Godley and John Zugich who have been appointed by the A.S.H.P. president. Other committee members include: Dr. Robert P. Fischelis, Director of the Division and Dean Earl R. Serles, representing the A. Ph. A., Worth L. Howard of the American Hospital Association and Sister M. Adelaide representing the Catholic Hospital Association.

### PAN-AMERICAN PHARMACY CONGRESS

The first Pan-American Congress of Pharmacy will meet in Havana, Cuba, December 1-8, 1948. The opening session will be held in the hemicycle of the House of Representatives, Cuban National Capitol on Wednesday, December 1, at 9:00 P.M. After the opening session, the other meetings of the Congress will be held in the Academy of Sciences, 460 Cuba Street.

The program has been divided into several sections covering professional relations, history, legislation, education, and scientific knowledge. The technical papers will cover a broad group of subjects including: parenteral solutions, protein hydrolysates, tablet making, vitamin preparations, allergenic preparations, antihistamine and other drugs, and sterilization.

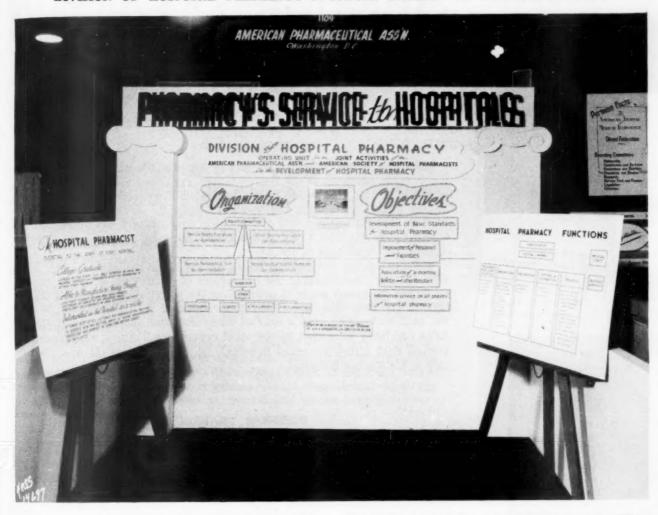
Hospital pharmacy will be discussed in at least two papers. Dr. José Capote Diaz is president of the Congress. Correspondence regarding the Congress should be sent to Dr. Héctor Zayas-Bazán Perdomo, Malecon 307, Havana, Cuba.

### 1949 INSTITUTES ON HOSPITAL PHARMACY

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According to an announcement by the American Hospital Association, tentative plans are being made to hold two institutes on hospital pharmacy during 1949, one of which will be held on the West coast. Definite plans will be announced in the forthcoming issue of THE BULLETIN.

### DIVISION OF HOSPITAL PHARMACY SPONSORS EXHIBIT AT AHA CONVENTION



The American Pharmaceutical Association and the American Society of Hospital Pharmacists were represented at the annual convention of the American Hospital Association meeting in Atlantic City, September 20 - 23 with an exhibit depicting the part which the Division of Hospital Pharmacy plays in the development of hospital pharmacy. The exhibit was entitled "Pharmacy's Service to Hospitals" and demonstrated the requirements of hospital pharmacists, the objectives of the Division of Hospital Pharmacy and the joint form of organization. It further outlined the functions of the hospital pharmacy and showed the relationship of the pharmacy to the hospital administrator and the medical staff. This was accomplished through a chart supplied by the Hospital Facilities Division of the U.S. Public Health Service.

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Many pharmacists and hospital administrators from various parts of the United States and Canada visited the exhibit during the convention. Members from the New Jersey Society of Hospital

Pharmacists and the Philadelphia Hospital Pharmacists' Association and Gloria Niemeyer, Assistant Director of the Division of Hospital Pharmacy were present at the booth throughout the week to talk with hospital people attending the convention and answer questions.

Observing the theme "Hospitals--Vital to Better Living," this occasion marked the 50th anniversay of the American Hospital Association. This year's program included large general meetings, the morning sessions being devoted to joint meetings of the Association's House of Delegates and the Assembly discussing problems concerned with the care of the patient and hospital finances. Speakers on the afternoon seesions represented various phases of community life and interests such as education, science and research, finance, business and industry, and broad field of public health and government, the individual and the phase of hospital interest in national defense.



President Zugich

# American Society of 1948 Meeting



Secretary Godley



Godley, Jerome Yalon



Dr. Elizabeth H. Newkom

Members of the American Society of Hospital Pharmacists representing various sections of the United States convened for their fifth annual meeting at the convention of the American Pharmaceutical Association in San Francisco during the week of August 8. Society meetings were held on Monday and Tuesday and hospital pharmacists had an opportunity to attend the various A. Ph. A. sectional meetings and general sessions during the remainder of the week.

Welcoming the Society on behalf of the local committee, Mr. Julian Wells, chief pharmacist at the University of California Hospital, reported on the progress made in organizing the hospital pharmacists in California and expressed their desire to cooperate with the national Society. He also announced that a tour of three hospital pharmacies in the Bay Area had been arranged by the local committee. About 60 pharmacists visited Fort Miley Veterans Hospital, St. Mary's Hospital and University of California Hospital.

### BUSINESS TRANSACTED

Reports of the various committee chairmen marked the progress which the Society has made during the past year. In the President's report, Mr. Zugich pointed out that the executive committee had done much toward bringing about greater cooperation between officers, committee members, local chapters, and individual members by keeping these people better informed concerning Society activities. He also outlined the part which the Division of Hospital Pharmacy had taken in promoting Society activities and the work of the executive committee in carrying out the wishes of the Society in regard to the Division. Other activities of the Society during the past year as reviewed by the officers and committee chairmen included: continuation of the Society's BULLETIN; cooperation in sponsoring annual institutes on hospital pharmacy; preparation of a set of minimum standards for hospital pharmacy to be approved by the Society; an increase of approximately 240 members; and active participation in hospital meetings by members of the Society.

Reports by Dr. Robert P. Fischelis and Miss Gloria Niemeyer on the activities of the Division of Hospital Pharmacy brought A.S.H.P. members up-to-date on the work being carried out at A. Ph. A. headquarters in behalf of hospital pharmacy and the American Society of Hospital Pharmacists.

Dr. E. R. Serles, speaking as one of the A.Ph.A.'s representatives on the Policy Committee pointed out the great interest which the Association has in the Division and in the Society. He advised that in the appointment of a Director for the Division that qualifications be the criterion, whether or not the individual is a hospital pharmacist.

Included in the more important business transacted at this meeting were the amendments to the Society's Constitution and By-Laws. An

# of Hospital Pharmacists in San Francisco



President-Elect Purdum

amendment to the By-Laws provides for a House of Delegates to be made up of the executive committee and delegates from the affiliated chapters. Approval was also given to amend the By-Laws so that there is now a provision for a secretary to be nominated by the executive committee and elected annually by the House of Delegates. There will no longer be an elected secretary. This eliminates the necessity for a change in the secretarial office of the Society each year. According to the change, the Secretary will be a member and secretary of all standing committees.

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Another change provides that new members now joining the Society will become members on the date they make application and for the twelve months following.

An amendment to the Constitution to be voted on by the Society's membership in the forthcoming election would make provision for organizing affiliated chapters of the A.S.H.P. According to this, at least ten active members would be necessary to organize a local chapter and the group must also meet the requirements as established by the executive committee.



Col. Goriup



Charles G. Towne

### PAPERS PRESENTED

The need for specialized training in hospital pharmacy was discussed by Mr. Charles G. Towne, chief pharmacist of the Veterans Administration Regional Office in Los Angeles, California. He pointed out the need for such a course in the college curriculum and its potential value in creating more interest in hospital pharmacy among students, Mr. Towne presented a broad outline for a course along with actual training in a hospital pharmacy.

"Public Relations Programs By The Hospital Pharmacist" was the subject of a paper presented by Sister Mary Junilla, chief pharmacist at Queen of Angels Hospital in Los Angeles. Introducing her subject, Sister Junilla defined Public Relations and outlined types of public relations programs which might be carried out by the hospital pharmacist pointing out in detail the steps for activating such programs.

A paper on "The Practical Application of pH and Osmotic Pressure in Ophthalmic and Nasal Solutions" by Jerome M. Yalon, Pharmacist, University of California Hospital in San Francisco. This paper, supplemented with formulas offered a source of valuable information to hospital pharmacists.

Other papers presented at this meeting included "Evolution of Intravenous Medication" by Dr. Elizabeth H. Newkom, Medical Director, Cutter Laboratories, Oakland, California and "Pharmaceutical Service in the Army" by Colonel Othmar F. Goriup, Chief Medical Service Corps of the U. S. Army



Sister Mary Junilla

### A.S.H.P. OFFICERS 1948 - 1949



President W. Arthur Purdum

Elected by the members of the Society to guide its activities during the ensuing year are President W. Arthur Purdum of Johns Hopkins Hospital in Baltimore, Maryland; Vice-President Geraldine Stockert of Monmouth Memorial Hospital in Long Branch, New Jersey; Secretary J. Robert Cathcart of Chester County Hospital, West Chester, Pennsylvania; and Treasurer Sister Jeanne Marie of St. Elizabeth Hospital in Youngstown, Ohio. Following installation of new officers during the final session, Dr. Purdum made a few comments pledging his and the executive committee's support to the interests of the Society. Committee appointments have been made and are published in this issue of THE BULLETIN.

Nominations for officers to be elected by ballot this fall are: Herbert L. Flack, Jefferson Medical College Hospital, Philadelphia, and Albert P. Lauve, Mercy Hospital, New Orleans for President; W. Paul Briggs, Department of the Navy, Washington D. C. and Eddie Wolfe, Mt. Alto Hospital, Washington, D. C. for Vice-President; and Sister Mary Junilla, Queen of Angels Hospital, Los Angeles and Jerome M. Yalon, University of California Hospital, San Francisco for Treasurer.



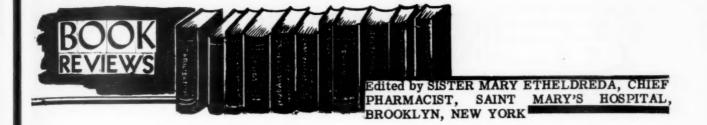
Vice-President Geraldine Stockert



Secretary J. R. Cathcart



Treasurer Sister Jeanne Marie



PHARMACOLOGY AND THERAPEUTICS IN NURSING. By Marion Sylvester Dooley, A.B., M.D., and Josephine Rappaport, R.N., B.S., 444 pages, 6" x 9-1/4", 1948. First Edition. Published by McGraw-Hill Book Co., Inc., New York. Price \$3.75

As stated in the preface "the plan of this text is in accord in relating drug study to medical and surgical nursing and to dietotherapy, making the study of drugs truly functional by taking it largely to the bedside." It is one of the first texts written according to the U.S.P. XIII and N.F. VIII. A chapter on measurements and computations is included.

It is essentially different from all other texts in that the author attempts to emphasize newer drugs and the current uses of older drugs in a pertinent yet brief discussion. The text is actually to the point. It is intended to teach students on a college level. Outstanding features of this book include: Five laboratory demonstrations of action of drugs on animals; a list of commonly used proprietary names with their standard nonproprietary names; and a list of visual materials to supplement the material in the book. The visual aids are listed according to chapters.

LABORATORY MANUAL OF PHARMACOLOGY. By William T. Taylor, Ph.D. and Richard J. Weber, Ph.D., 151 pages, 8" x 10½". First Edition. Published by W. B. Saunders Co., Philadelphia, Pa. Price \$1.90

Part One of this manual consists of 12 experiments on the elementary principles of materia medica and solutions. By actual handling and preparation of solutions the nurse is expected to become familiar with the glassware and apparatus including graduates, minim glasses and syringes; also, balances and weights. The nurse also observes the physical appearance of such galenicals as: Tinctures, magmas, mixtures, emulsions, syrups, elixirs, spirits, etc.

Part Two includes experiments on rabbits and frogs. Topics covered are: anesthesia, strychnine, central nervous system depressants, autonomic stimulants, depressants of the gastro-intestinal tract, peripheral circulation, respiratory stimulants, insulin shock and physiological antidotes.

The manual is written in workbook style. It is recommended for teaching by observation and may be the answer to an instructors request for a laboratory manual with experiments on animals.

ASEPTIC TREATMENT OF WOUNDS. By Carl W. Walter, M.D., 372 pages,  $8\frac{1}{2}$ " x 11", 1948, First Edition. Published by The Macmillan Co., New York, N.Y. Price \$9.00

This text is most highly recommended as an essential addition to your library. It contains far more pharmaceutical applications than the title indicates. The theories of chemical and physical destruction of bacteria by chemical disinfection, dry heat and steam sterilization are thoroughly explained. The specific mode of action of chemicals in various concentrations and the use of these drugs in various operating room technics are elaborated on to great length. Cross section diagrams explain the Arnold steam sterilizer, autoclave, and the dry heat sterilizer. There is also a complete chapter on the preparation of parenteral fluids. The importance of a good still in the preparation of pure distilled water, pyrogen-free, is presented in well deserved detail. The processing of glassware, filters, rubber tubing and other apparatus used in the preparation of parenteral fluids is also described. The actual preparation of the solutions and the sterilization process is shown by diagram. Included is an interesting commentary on the preparation of procaine hydrochloride and morphine sulfate for injection. There is also a chapter on Blood and Plasma processing. No medical library may be considered complete without this text.



THE AKRON AREA SOCIETY OF HOSPITAL PHARMACISTS held its first meeting of the 1948-1949 season at the People's Hospital in Akron on September 14, 1948. Prior to the business meeting a film was presented by the courtesy of the Squibb Laboratories depicting advances in pharmaceutical procedures and techniques in large scale manufacturers. Following the showing of the film the minutes of the last meeting were read, corrected and accepted with corrections. The treasury reports that there is a balance of \$9.00 in the treasury.

A discussion of the program and schedule for meetings was held and it was decided that an invitation will be extended to the Cleveland Society of Hospital Pharmacists to join the Akron Society at one of our meetings, the date having tentatively been set for April, 1949. Several suggestions for guest speakers were made for this meeting. Mr. McElroy will talk to Mr. George Cyferth about speaking on professional retail pharmacy. The meeting was closed with a short informal discussion on pharmaceutical problems and refreshments were served.

The October meeting will be held in Youngstown at St. Elizabeth Hospital the second Tuesday of the month.

THE NORTHERN CALIFORNIA SOCIETY OF HOSPITAL PHARMACISTS recently organized a local chapter of the American Society of Hospital Pharmacists and has applied for affiliation with the national Society. Officers of this new organization are: President Jerome M. Yalon, University of California Hospital Pharmacy; Vice-President Henry W. Beard, Veterans Administration Pharmacy, Oakland; Secretary D. Oliver, Peralta Hospital Pharmacy, Oakland; and Treasurer Francis R. Spinelli, Southern Pacific Hospital.

At the September meeting, the group discussed plans for holding an Institute on Hospital Pharmacy on the west coast.

Preliminary plans were also made for a membership drive in the Bay Area.

THE SOUTHEASTERN HOSPITAL PHARMACISTS ASSOCIATION will convene at the McAllister Hotel in Miami, Florida on October 30-31. Mr.

Joe Vance, program chairman, has announced the following speakers for this two-day meeting:

"Service to the Patient," by Lillian Price, chief pharmacists Emory University Hospital, Atlanta, Georgia.

"The Patient and the Hospital," by Hy Africk, chief pharmacist, Oak Ridge (Tenn.) Hospital.

"Pharmacy in the U. S. Navy," by Comdr. W. Paul Briggs, MSC, U. S. N., Washington, D. C.

"The Hospital Pharmacist's Role in Teaching," by W. P. O'Brien, chief pharmacist, Touro Infirmary, New Orleans, Louisiana.

"The Importance of Properly Registering Your Pharmacy," by Anna D. Thiel, pharmacist, Jackson Memorial Hospital, Miami, Florida.

In charge of local arrangements is Mrs. Anna D. Thiel, chief pharmacist at Jackson Memorial Hospital in Miami and past president of the Southeastern group. Mr. Albert P. Lauve, will be installed as president of the Southeastern Hospital Pharmacists Association at this meeting.

THE PHILADELPHIA HOSPITAL PHARMACISTS ASSOCIATION held its first meeting of the fall on Tuesday, September 21, 1948, at the Philadelphia College of Pharmacy and Science. The President, Mr. J. Robert Cathcart, addressed the members and emphasized that in this new era of hospital construction, the pharmacists as a group, should make known their requirements for adequate pharmacy space and suitable location.

Committee Chairmen for the ensuing year were appointed as follows: Program - Herbert Flack; Membership - Jacob Greenblatt; Publicity - W. C. Anderson; Legislation - Thomas Manzelli; New Drugs - James Inashima; Professional Relations and Convention-Estelle Kiszonas; Swapping - Mrs. Vera Durando; and Constitution and By-Laws - Edwin Kercher.

THE MARYLAND ASSOCIATION OF HOSPITAL PHARMACISTS will hold a meeting in conjunction with the Maryland-District of Columbia Hospital Association, at the Statler Hotel in Washington, D. C. on November 8-9. Members of the City of Washington Chapter of the American Society of Hospital Pharmacists have been invited to attend

this meeting. One of the speakers is Mr. J. Robert Cathcart, secretary of the A.S.H.P. The program for this meeting is as follows:

"This Romance Called Pharmacy" by Henry V. Merkel, Staff Representative of Winthrop-Stearns, associated with the Baltimore Division - al Office.

"Practical Manufacturing Procedures for Parenteral Preparations" by J. R. Cathcart, chief pharmacist, Chester County Hospital, West Chester, Pa.

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"Hospital Organization" by Richard J. Ackart, M.D., Assistant Director, Johns Hopkins Hospital, Baltimore.

THE LOUISIANA SOCIETY OF HOSPITAL PHARMACISTS heard Dr. Stanley Cohen speak on anti-histaminic drugs and their use in relieving allergies at their September meeting held at Mercy Hospital. Frank Thompson, medical hospital representative of Parke Davis and Company was also a speaker.

THE MICHIGAN CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS met at University Hospital in Ann Arbor on September 23. Comittee appointments for the coming year were made as follows:

Program Committee - Jane Rogan, Chairman; Lou Lester and Al Lorch.

Membership Committee - Elsie Jacobson, Chairman; Adam Stark and Charles Caswell.

Policy and Long Range Planning - Don Francke, Chairman; E. Tennant and J. C. Campbell.

Other business transacted included a discussion in regard to a salary survey and it was decided to mail a questionnaire to each member in the Michigan chapter.

It was also voted to reduce the annual dues in the local chapter from \$5.00 to \$3.00.

NORTHERN CALIFORNIA SOCIETY OF HOS-PITAL PHARMACISTS held its October meeting on October 12, 1948 at 8:00 p.m. at Hahnemann Hospital, San Francisco, California, with more than thirty pharmacists attending. A one hour film on sex hormones was presented by Parke, Davis and Company in addition to the regular order of business.

MASSACHUSETTS SOCIETY OF HOSPITAL PHARMACISTS met on the evening of September 15, 1948 at the Newton-Wellsley Hospital in Newton Lower Falls, Mass. The meeting was called to order to 7:30 p.m. with 14 members present.

During the program, Mr. William E. Hassen, Jr. of the Massachusetts College of Pharmacy spoke on "Antihistaminics".

THE ILLINOIS CHAPTER OF THE AMERICAN SOCIETY OF HOSPITAL PHARMACISTS held a meeting on October 12 with Dr. J. S. Wells, Associate Professor in the Department of Pharmacology at Northwessern University, as guest speaker. His subject was "The Mechanism of Pyrogenic Reaction".

During this meeting a committee composed of Florence Hatter, J. B. Scalleta, Malcolm Hutton, and Louis Gdalman was appointed to formulate plans for a long-range program for the Illinois Chapter.

THE TRI-STATE HOSPITAL ASSEMBLY will hold its 1949 meeting at the Palmer House in Chicago on May 2, 3, and 4. A section on hospital pharmacy will be held in conjunction with this meeting.



New Jersey Society of Hospital Pharmacists Meeting observing National Pharmacy Week. April 1948

# Proposed MINIMUM STANDARDS For PHARMACIES In HOSPITALS

I. ORGANIZATION. There shall be a properly organized pharmacy department under the direction of a professionally competent, legally qualified pharmacist whose training in hospital pharmacy conforms to the standards approved by the Division of Hospital Pharmacy of the American Pharmaceutical Association and the American Society of Hospital Pharmacists.

II. POLICIES. The chief pharmacist, with the approval and cooperation of the director, or medical director and governing board of the hospital, shall initiate and develop rules and regulations pertaining to the administrative policies of the department. The chief pharmacist, with the approval and cooperation of the pharmacy committee, shall initiate and develop rules and regulations pertaining to the professional policies of the department, subject to approval by the executive committee of the medical staff and the director of the hospital.

III. PERSONNEL. There shall be an adequate administrative, professional and lay staff conforming to proper physical, mental, and character standards.

IV. FACILITIES. Adequate pharmaceutical and administrative facilities shall be provided for the pharmacy department, including especially (a) the necessary equipment for the compounding, dispensing and manufacturing of pharmaceuticals and parenteral preparations, (b) bookkeeping and related supplies necessary for the proper administration of the department, (c) an adequate library and filing equipment to make information concerning drugs readily available to both pharmacists and physicians, (d) special locked storage space for narcotics and alcohol, (e) a refrigerator for the storage of thermolabile products, (f) adequate floor space for all pharmacy operations and the storage of pharmaceuticals.

V. RESPONSIBILITIES. The pharmacist shall be responsible for: (a) the preparation and sterilization of injectible medication manufactured in the hospital, (b) the manufacture of pharmaceuticals, (c) the dispensing of drugs, chemicals, and pharmaceutical preparations, (d) the filling and label -

ing of all drug containers issued to nursing or clinic units from which medication is to be administered, (e) a semi-monthly inspection of all pharmaceutical supplies on nursing units, (f) the maintenance of an approved stock of antidotes and other emergency drugs in an emergency suite, (g) the dispensing of all narcotic drugs and the maintenance of a perpetual inventory of them, (h) specifications for purchase of all drugs, chemicals and pharmaceutical preparations used in the treatment of patients, (i) specifications for purchase and storage of antibiotics and biologicals, (j) furnishing information concerning medications to physicians, interns and nurses, (k) establishment and maintenance, in cooperation with the accounting department of a satisfactory system of records and bookkeeping in accordance with the policies of the hospital for (1) charging patients for drugs and pharmaceutical supplies prepared for them, (2) maintaining adequate control over the requisitioning and dispensing of all drugs and pharmaceutical supplies, (1) planning, organizing and directing pharmacy policies and procedures in accordance with the established policies of the hospital, (m) teaching courses in pharmacology to students of the school of nursing, (n) implementing the decisions of the pharmacy committee which have been approved by the executive committee of the medical staff and the director of the hospital, (o) the preparation of periodic reports on the progress of the department for submission to the administrator of the hospital.

VI. PHARMACY COMMITTEE. The hospital shall appoint a pharmacy committee which shall meet at intervals. The members of the committee shall be chosen from the several divisions of the medical staff. The chief pharmacist shall be a member of the committee and shall serve as its secretary. He shall keep a transcript of proceedings and shall forward a copy to the proper governing authority of the hospital. The purpose of the committee shall be (a) to establish a hospital formulary, (b) to serve as an advisory group to the hospital pharmacist on matters pertaining to the choice of drugs used in therapy, (c) to evaluate clinical data concerning drugs requested for use in the hospital, (d) to add to and delete from the list of drugs accepted for use in the hospital, (e) to prevent unnecessary duplication in stock of several brands of the same basic drug and (f) to make recommendations concerning drugs to be stocked on the nursing units.

<sup>\*</sup> See Report of Committee on Minimum Standards, page 239.

#### AN ELABORATION ON THE PROPOSED MINIMUM STANDARDS

This discussion embodying the six proposed minimum standards for pharmacies in hospitals was prepared in individual sections by the various members of the committee and collated by Chairman Purdum. Thus, the discussion represents an attempt at clarification and elaboration of the standards as expressed but should be considered distinctly separate from the Proposed Minimum Standards. The members of the committee feel that the minimum standards represent basic concepts or fundamental principles which are not controversial. However, it is felt that several items in the elaboration are open to further discussion and interpretation and while the committee agrees in broad principle on the statements made in the elaboration, it recognizes that certain modifications will undoubtedly be necessary.

#### I. ORGANIZATION

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The chief pharmacist shall be immediately responsible to the director or medical director of the institution and through him to the governing board of the hospital. The chief pharmacist shall be responsible for developing, supervising and coordinating all the activities of this department.

The well organized pharmacy department should be divided into four major subdivisions:

- 1. Out-patient prescription laboratory
- 2. General dispensing laboratory
- 3. Manufacturing laboratory
- 4. Administration

It is evident that the successful hospital pharmacy department is confronted with a complexity of problems requiring close cooperation with the management of the hospital and with other hospital departments. Mainly, these problems fall into scientific, administrative, mechanical, or educational classifications.

While the organizational structure of the department may vary depending upon size and character of the individual institution, the establishment of the foregoing fundamental principles should assure an efficient and well integrated pharmacy department.

II. POLICIES

Only those orders and prescriptions originating within the hospital shall be filled by the hospital pharmacy. Prescriptions written by physicians who are not members of the hospital staff shall not be filled by the hospital pharmacy. Regulations pertaining to the dispensing of medications to hospital personnel shall be formulated and enforced.

All policies, both administrative and professional, of necessity must overlap themselves and overlap other sections of these standards. For these reasons, other details of policy are given in the appropriate places.

#### III. PERSONNEL

The personnel listed below represent the ultimate in hospital pharmacy staffing and it is realized that varying numbers and components of pharmacy staffs will be required, based on size and scope of operations of each activity.

- 1. Chief pharmacist
- 2. One or more assistant chief pharmacists
- 3. Staff pharmacists
- 4. Intern trainees (where intern program has been activated)
- 5. Non-professionally trained pharmacy helpers
- 6. Clerical help

The Chief pharmacist, assistant chief(s) and staff pharmacists shall be graduates of approved schools of pharmacy and currently registered in one of the 48 states, the District of Columbia, or territories of the United States. In addition, the chief pharmacist shall be a diplomate of "a hospital pharmacy specialty board". (It is anticipated that these requirements will include graduate study leading to a M.S. or Ph.D. degree in pharmacy and the completion of a recognized hospital pharmacy internship.) The additional pharmacists, wherever pos-

<sup>1</sup>A school or college accredited by the American Council on Pharmaceutical Education. If graduation was prior to accrediting action by the Council, the school or college shall have been a member of the American Association of Colleges of Pharmacy.

sible, shall have had formal training in hospital pharmacy and preferably have completed an approved hospital pharmacy internship. This is especially true of the assistant chief pharmacist(s). In small hospitals where it may not be economically feasible to have a pharmacist devote full-time to purely phar maceutical matters, it is recommended that a pharmacist be utilized on a full-time basis and assigned additional related collateral duties. In smaller activities in which a pharmacist cannot be utilized on a full-time basis even with related collateral duties, a qualified pharmacist should be secured for a portion of each day. This arrangement is not completely satisfactory, but is superior to no professional pharmacy service. Consideration shall be given not only to the professional competence of registered pharmacists, but also to personality traits which will materially influence compatibility and cooperation with other members of the professional hospital staff. All registered pharmacists shall be urged to maintain membership in professional pharmaceutical societies and participate actively in their functions.

The selection of interns shall be on the basis of minimum standards established for the over-all intern program. In all instances incumbents shall be graduate, and where possible registered pharmacists and shall be assigned duties commensurate with their schooling and training.

Clerical and stenographic assistance shall be provided to assist with records, reports and correspondence.

The non-professionally trained pharmacy helpers whose work shall be largely of a mechanical and janitorial nature, incident, or preparatory to the work of a pharmacist shall be carefully selected, in view of their numerous contacts with members of the professional staff in the hospital. In order to insure the best pharmaceutical service and as a protection to the patient, these helpers shall not be assigned duties which can properly be performed only by professionally trained registered pharmacists.

The personnel department of the hospital shall provide rules for employee conduct and the chief pharmacist shall be responsible for the enforcement of such rules.

The personnel department shall provide applicants to fill vacancies and the chief pharmacist shall be responsible for the employment and discharge of employees in the pharmacy department

Employees shall not be required to work more than 48 hours per week.

#### IV. FACILITIES

In those states where minimum equipment lists have been provided by the boards of pharmacy or other agencies controlling the practice of pharmacy, such minimum equipment must be available in the pharmacy for proper compliance with state laws and/or regulations.

Adequate office furniture, stationery, bookkeeping and stenographic supplies shall be provided.

A modern pharmaceutical library shall be maintained. As a minimum, latest editions of the following shall be available:

United States Pharmacopoeia
National Formulary
New and Nonofficial Remedies
Pharmaceutical Recipe Book
Merck Index
Merck Manual
Gutman, Modern Drug Encyclopedia and
Therapeutic Index

United States Dispensatory
Also, the library shall contain recent editions of text and

reference books covering the following fields:

Pharmacy: theoretical and practical
Chemistry: general, organic, medicinal and biological
Pharmacology, toxicology and therapeutics
Bacteriology
Biological stains and staining techniques
Sterilization and disinfection
Medical dictionary

The following journals shall be available:

Journal of the American Pharmaceutical Association

both Scientific and Practical Pharmacy Editions, Bulletin of the American Society of Hospital Pharmacists,

American Professional Pharmacist, Journal of the American Medical Association.

There shall be maintained files containing literature on newer therapeutic agents, the house organs of pharmaceutical manufacturers, and their catalogs and price lists.

Floor space in the pharmacy shall amount to not less than 5 square feet per hospital bed. The hospital pharmacy engaged in the manufacture of pharmaceuticals and parenterals shall have additional space as required for the proper carrying out of these functions.

#### V. RESPONSIBILITIES

Following the principles of good management, the pharmacist should be assigned specified responsibilities together with the

proper authority to carry them out.

The pharmacist is best qualified by education, training and experience to assume responsibility for the preparation and sterilization of injectible medication. The manufacture of injectible medication is a major responsibility which should be assigned only to those legally and professionally qualified. It is unwise for the hospital to place itself in an untenable position, legally and morally, by assigning this responsibility to unqualified and unlicensed personnel. By the same standard the pharmacist is the individual who should prepare the specifications for purchase of these medicaments if they are not manufactured in the hospital.

It is self evident that the manufacture of pharmaceuticals and the dispensing of drugs, chemicals, and pharmaceutical preparations should be the responsibility solely of the pharmacist

and should not be entrusted to unqualified personnel.

The proper filling and labeling of all drug containers is an important task which should be centralized. Many errors leading to results detrimental and even fatal to the patient have resulted from the improper practice of assigning this responsibility to others. Hand in hand with proper filling and labeling is a semi-monthly inspection of all pharmaceutical supplies on nursing units to see that medications are properly labeled and to insure that the drugs being used have not deteriorated nor in any other manner become unfit for use.

Certain emergency drugs should be available for rapid procurement at times when the pharmacy is closed. A convenient method of handling this problem is to establish a suite of emergency drugs readily accessible to the department of nursing or other qualified personnel. This situation may also be handled by having a pharmacist always available for emergency calls. However, even in this latter case it is still wise to maintain an emergency suite of drugs available to the nursing department since there may be times when the pharmacist cannot be reached or is too far from the hospital to obtain the medication as rapidly as required.

Narcotic drugs should be dispensed in strict accordance with Federal and State narcotic regulations. The pharmacist should, at all times, keep narcotic drugs in a ocked compartment. He should maintain a perpetual recorc of the stock on hand and should record all narcotic drugs dispensed in such a manner that the final disposition of any particular item may be

readily traced.

The pharmacist should furnish specifications for the purchase of all drugs, chemicals and pharmaceutical preparations even though the purchasing agent does the actual procurement through a centralized department. Since the pharmacist has the responsibility for the compounding, dispensing and manufacture of the drugs used in the hospital it is only reasonable that he should have the commensurate authority to specify the drugs to be purchased. In large institutions with centralized purchasing, the pharmacist and the purchasing agent should work hand-in-hand, each recognizing the importance of the function of the other. In such a system it is essential that the pharmacist state the specifications for drugs to be purchased and to have authority to reject any article below standard or not complying with specifications so that the purchasing agent may be guided and assisted in his function. The pharmacist will also, in certain instances, wish to consult with the pharmacy committee concerning specifications for drugs.

Since the potency of many drugs is affected by temperature, light, moisture and other conditions, the pharmacist should establish storage specifications for labile products and should be

provided with adequate refrigeration facilities so that the pharmaceuticals affected by heat may be properly preserved.

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The pharmacy should be the hospital's center for information concerning drugs. The pharmacist should be thoroughly familiar with the library at his disposal (as detailed in the section on facilities) so that, upon request, information may be secured promptly. Also, the pharmacist should be responsible for the systematic arrangement of this library and for additions to it as necessary. The pharmacy should, if possible, publisha circular or bulletin containing information on new drugs. This should be circulated to members of the medical and nursing staffs. Representatives from pharmaceutical firms calling on members of the hospital staff should make the pharmacy their first point of call to acquaint the pharmacist with the product they would like to detail, to learn how the product fits into the overall pharmacy policy, to become conversant with the regulations regarding the procedures to be followed when detailing in the hospital.

The establishment and maintenance of proper business records in the pharmacy is one of the major administrative duties of the pharmacist. The purpose of such records is to aid the pharmacist and the hospital administration in evaluating the efficiency and economy with which the pharmacy department is being operated, to insure that adequate direct or indirect charges for medication are apportioned, and to prevent needless waste through adequate control over the requisitioning and dispensing

of medication and related supplies.

The accounting department should assist the pharmacist in establishing a proper system of business records. Charges for drugs and related supplies issued by the pharmacy to patients or to other units of the hospital should be credited to the pharmacy. All invoices for drugs and related supplies should be charged to the pharmacy. Administrative expense and other services rendered to the pharmacy should be charged to it. Services rendered by the pharmacy to other units of the hospital should be credited to the pharmacy.

A proper system of records supplies to the pharmacist basic information pertaining to the unit cost of drugs whether manufactured or purchased. It should include a consideration of inventory, turnover of stock, distribution of supplies, drug cost, departmental overhead, administrative costs, operating expense per patient day and the cost of drugs per patient day. A separate stock card should be provided for each item purchased, or manufactured. The card should include definite information including a description or specification of the item, date manufactured or purchased, quantity, source of supply, unit cost, re-

quisition number and or order number.

In planning, organizing and directing pharmacy policies and procedures in accordance with the established policies of the hospital, the pharmacist should proceed in such a manner as to assure the best pharmacy service to the patient and at the same time to establish an efficient and economical department of the hospital. To accomplish this he must develop work schedules, routines and procedures within the department and also he must work cooperatively with other departments which constantly obtain service for the patient through the pharmacy. In establishing pharmacy policies he will be guided by the advise of the pharmacy committee, by the administrative officer of the hospital, and in certain instances by other specialized departments of the institution.

It is especially advantageous that the pharmacist be assigned to instruct student nurses in pharmacology since, in addition to possessing a basic knowledge of the action and uses of drugs, he has a more particularized acquaintance of the preparations, dosage forms and storage requirements of drugs used in the

After the pharmacy committee has made its decisions regarding the addition or deletion of drugs approved for use in the hospital, or has passed other recommendations regarding pharmacy policy, these decisions are then forwarded to the executive committee of the medical staff and the director of the hospital for final approval. When their approval has been obtained it is then the responsibility of the pharmacist to carry out the recommendations.

The pharmacist should prepare reports on the progress of the pharmacy department and submit them to the director of the hospital. These reports may be rendered monthly, quarterly or yearly depending upon the requirements of the hospital. Reports should include a summary of all transactions in the department for the fiscal period involved.

VL PHARMACY COMMITTEE

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Professional policies relating to drugs should emanate from this committee. The sound therapeutic and economic basis for the drug policy is the establishment of a hospital formulary. The formulary should be revised at least as often as new editions of the United States Pharmacopoeia and National Formulary appear, and interim supplements should be issued as necessary. The choice of drugs should be such that the physician will not be restricted in his prescribing to an extent which will be detrimental to the patient. The formulary is an important factor in the efficient operation of the pharmacy and in the economic structure of the hospital in that it makes possible the stocking of fewer items and guards against duplication.

The terms of office of the several members of the committee should be staggered. This will prevent the appointment at one time of an entirely new and inexperienced committee.

The committee should meet once a month as well as on special call. Medical Staff members should present, in writ ing, their requests to the committee for action. The committee meetings should precede staff meetings by a sufficient interval of time to allow the secretary to make up reports. Reports of committee meetings and actions taken should be presented by the secretary at the medical staff meetings. These reports should include additions to the formulary, deletions from the formulary, reasons for not including requested items and all other actions taken by the committee.

## Standards for Internships in Hospital Pharmacies

An internship in hospital pharmacy is a period of organized training in an accredited hospital pharmacy under the direction and supervision of personnel qualified to offer such train ing. Two types of internships are recognized, non-academic and academic. The non-academic internship shall be a period of training in a hospital pharmacy of not less than 2100 hours. The academic internship shall consist of training in the hospital pharmacy of not less than 2100 hours, plus a minimum of one academic year of graduate study in an accredited graduate school associated with a school of pharmacy and leading to a master of science degree.

The applicant for an internship shall be a graduate of a school of pharmacy accredited by the American Council on Pharmaceutical Education. The applicant's grades during his entire college carreer shall be better than the average for his institution. The application shall include a statement of the applicant's personal background and pharmaceutical experience. The applicant shall submit a small recent photograph. He shall request letters of recommendation from his dean of pharmacy and from at least two other members of the pharmacy faculty. Also, an official transcript of his college record shall be submitted. Personal interviews are desirable before appointments

Intern training programs shall be offered only by approved general hospitals of at least 200 beds. The hospitals shall have active out-patient service. A hospital not having an outpatient department may conduct an intern training program provided arrangements are made for the intern to receive training in out-patient pharmacy service in another approved

The personnel of the hospital pharmacy shall conform to the standards approved by the American Society of Hospital Pharmacists and the Policy Committee of the Division of Hospital Pharmacy of the American Pharmaceutical Association.

Under either type of internship, the training program in the hospital pharmacy shall conform to the following outline:

- A. The department of pharmacy shall include the following four subdivisions:
  - 1. Out-patient prescription laboratory
    - 2. General dispensing laboratory 3. Manufacturing laboratory
    - 4. Administration

B. Where possible, the optimal procedure is to have four interns on two rotating services. One service to commence in July of a year and the second service to begin the following January. This provides a convenient dovetailing of rotation processes. However, where such a group cannot be accommodated, it is better to adopt a one service procedure, so modifying the rotation of the individual through the four subdivisions to overlap as little as possible on the subdivision in which a second individual may be serving. Where only one intern constitutes the service, the straight rotation described below may be followed without conflict.

C. Each intern can concentrate completely on the operation of and the problems involved in each departmental subdivision by rotation as follows:

1. Out-patient prescription laboratory 350 hours minimum 2. General dispensing laboratory

525 hours minimum

- 3. Manufacturing laboratory
- 4. Administration

700 hours minimum 525 hours minimum

D. While in service in the out-patient division, an intern's training considers from a didactic and applied point of view:

- 1. Scope of standard stock and its determination.
- 2. Preparation and maintenance of standard stock.
- 3. Labeling problems, for patient directions and identification.
- Types of containers to be used for stock.
- 5. Permanency of individual items of stock and problems involved.
- 6. Maintenance of appearance of division and personnel.
- 7. Personnel attitudes and their effect on patients.
- Handling of out-patients. Study of the two basic plans for a hospital's operation of an out-patient department (horizontal and vertical) and the results each plan may have on the operation of a pharmacy dispensing unit.
- 9. Pricing prescriptions and a study of the problems involved with social service and clinical rate-downs for indigent patients. Further, a study of relative community costs (medical) and competitive influences.
- 10. Study of association and mutual problems encountered with community welfare agencies in the matter of supplying medical aid to indigent members of the community.
- 11. Study of factors involved in supplying medical care to subscribers to a plan for comprehensive medical care insurance such as may be encountered in industry, trade union activities or organized community plans.
- 12. Control of stock by accounting procedures (inventory) and the control of revenue.
- 13. Problems presented by the extemporaneous prescription.

E. While in service in the general dispensing laboratory, the following points are to be considered by the intern:

- 1. Organization of work.
- 2. Routine dispensing procedures and their effects on the departmental functions.
- Methods for preparation of stock for dispensing.
- 4. Study of labeling problems.
- 5. Permanency of stock.
- 6. Stock control and maintenance of adequate supplies.
- 7. Control of stock extended to hospital nursing floors.
- 8. Operative procedures involving narcotic control.
- 9. The use of the telephone.
- 10. Conduct in personal contacts with physicians, nurses and other professional people.
- 11. Problems entailed in extemporaneous prescription work.
- F. The intern considers the following matters in the manufacturing laboratory:
  - 1. Apparatus, its construction and operation.
  - 2. The manufacture of large quantities of pharmaceuticals.
  - 3. The manufacture of potent tinctures and fluidextracts and their chemical and biological assay.

    4. The preparation of all supplies for dispensing: methods
  - of filling containers and problems involved.

    5. Storage problems of "crudes", completed preparations in

bulk and preparation in dispensable units.

6. The manufacture of allergens.

7. The manufacture of culture media, laboratory stains and reagents.

8. The manufacture of soaps, cresol products, dermatologic

ointments and creams.

9. The manufacture of parenteral solutions, ampuls, ophthalmic solutions and ointments, and the consideration of sterilization procedures and technics which are involved. A study of the laboratory and facilities required.

10. A study of procedures used for the sterilization of solutions which are used in a sterile condition in a hospital such as soap solution and boric acid solution.

11. A study of the sterilization procedures for preparing linens, dressings and instruments for hospital use.

12. A study of control procedures and the maintenance of manufacturing records.

13. Organization of the laboratory as related to supplies and facilities.

G. While considering problems of administration, the following points are to be included in the studies of the intern:

1. Organization plans for each of the three previous subdivisions.

2. Personnel selection and management.

3. Supervision and its application.

4. The licensing of pharmacists and pharmacies.

5. Narcotic and alcohol control and the maintenance of records as provided by law.

6. Federal, state, and local laws and their application.

7. The formulary system and its application.

8. Accounting procedures and economics - a study of the application of various methods.

9. Supply and demand, both internal factors and factors af fecting markets.

10. Inventory control and its intimate association with accounting problems.

11. Fluctuating world markets and the effects of International politics on market conditions.

12. Operation of a surgical supplies unit.

13. Purchasing procedures and their application.

H. Some of the points mentioned in the previous sections as indicated for study may come under the operation plan of some other unit in the hospital. Close cooperation with such a department is required. During the time devoted to the study of each particular subdivision of the department of pharmacy, adequate time should be set aside for the intern to learn required steps in the other hospital departments which apply. Such departments involved might be as follows:

1. Purchasing department.

Accounting department.

3. Surgical supplies stores.

Bacteriological and/or clinical laboratories.

5. Medical college, department of pharmacology.

6. Allergen manufacturing laboratory.

7. X-ray department.

8. Medical records department.

The student should actively participate in and become perfectly familiar with the functions of these various units.

I. Weekly lecture periods are to be conducted by the chief pharmacist or one of his appointed assistants. These lectures should consider the theoretical aspects of the problems concerned with each subdivision. Lectures should be given in hospital administration with particular emphasis on inter-departmental relations. All interns should be required to attend and to take notes of the lectures. These notes are for review by the intern when confronted with any of these particular problems.

J. Monthly conferences of the entire departmental staff should be held. At these meetings each intern, in rotation, should be assigned a specific subject to present. In the preparation of his subject, he should be required to review all pertinent medical and pharmaceutical literature, give a resume of such literature and offer his own conclusions. By this means, the entire staff will be kept abreast of new develoments in medicine and phar macy. Simultaneously, the intern will learn the value of subject analysis of the literature and become adept at its presentation. An open discussion of the presentation should be held for criticisms and questions from the remainder of the staff.

K. The intern staff should assist in the preparation and presentation of lectures in pharmacology to student nurses.

L. The intern should be encouraged to maintain membership and to actively participate in the functions of professional phar-

maceutical organizations.

M. All clinical and therapeutic conferences conducted in the hospital should be announced and the intern staff required to attend, if the subject matter is deemed pertinent. Lectures and conferences in other institutions open to the public or presented by professional organizations should be attended by the intern staff, if the subject matter is pertinent. Voluntary attendance

at all other conferences should be commended.

N. An active program of research should be carried on during each intern service so that the intern might be taught the value of study, examination, analysis and the characteristic of inquisitiveness of appraoch to all problems. Such programs may be conducted with the interns working collectively on one project or working individually on separate problems. An intern will, in this way, learn to utilize the scientific literature and to become subjective in his thinking. One of the chief principles to be fostered in such work is his devotion of as much time to the checking of results to assure their accuracy as that spent upon advancing the problem. This point should be firmly brought home to the intern at the completion of his service as the result of such a program. Together with this should be emphasized the conviction that such careful control should be done without the feeling that time is being wasted. Accuracy is the key result of such fundamental training. To encourage the in-tern in his work, arrangements should be made for the presentation of his research at a scientific meeting. Subsequent publication of the research is desirable but this should be done only if the work is of sufficiently high calibre and complete enough to be of value to others. Hospital departments of pharmacy have an abundance of problems which must be studied. There are new problems developing each day. Or, there are many instances where collaboration is desirable with a clinical or preclinical department in the investigation of a subject matter. The individual department will benefit extensively by such work and its general service to the institution and to the public it serves will be improved accordingly.

O. The department should provide a system of residencies within its intern staff permitting an intern with aptitude to carry on another year of study and work. Those more complex features of hospital pharmacy operation concerning which the one year man could not possibly hope to do more than scratch the surface should be the object of this second year of study. The second year man would be designated as a senior resident and would be in charge of the junior resident intern staff. In this way, the senior resident would gain experience in the supervision of a staff and would be particularly well trained to take over the duties of a chief pharmacist in any hospital.

P. A complete notebook of all instruction is to be maintained by the intern, including sketches of equipment he has learned to use, important points learned at lectures he has attended, facts gleaned from staff conferences, etc. This book is to be orderly arranged and presented for examination at the close of an interm-

ship period.

Q. At the conclusion of an internship, the institution in which that internship is served (either one or two year internships) should award the intern a certificate indicating to all concerned that the individual has satisfactorily completed the prescribed schedule which made up a course of study at the institution.

If these proposed standards are acceptable to the Society and to the Policy Committee of the Division of Hospital Pharmacy of the American Pharmaceutical Association, the standards should then be submitted to the proper accrediting authorities for hospitals with the recommendation that they be adopted and enforced.

Respectfully submitted,

Russel Fiske Don E. Francke E. Burns Geiger Hans S. Hansen William E. Woods and W. Arthur Purdum, Chairman



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# OFFICIAL REPORTS

# SAN FRANCISCO MEETING - AUGUST 1948

COMMITTEE REPORTS

OFFICERS COMMITTEES AND AFFILIATED CHAPTERS

MEMBERSHIP BY STATES

# REPORTS OF

# A.S.H.P. OFFICERS & COMMITTEES

REPORT OF THE CHAIRMAN - 1948

John J. Zugich

The state of the affairs of the American Society of Hospital Pharmacists is reviewed annually by the President in a report to the membership meeting in convention with its parent organization - The American Pharmaceutical Association.

In order that this report in addition to those of my fellow officers and committee chairmen reach each member, full texts will be published in THE BULLETIN. The American Pharmaceutical Association will accord this affiliate the privilege of publishing the President's report in its Proceedings Number of the Journal. In that manner those members of the American Society of Hospital Pharmacists who cannot meet with us here in San Francisco will be appraised of the past year's activities.

This constitutes the fifth annual report presented by the chief officers of the Society.

#### ACKNOWLEDGEMENTS

This year's work has been well developed under the guidance of the Executive Committee composed of Messrs. Godley, Purdum, Cathcart, Wells, Wolfe, Mrs. Gary and Sister Etheldreda. Each at one time or another has contributed not only of much time but on occasion personal finances toward traveling expenses in the various meetings held. Their reports will speak for themselves. Committee members and chairmen devoted much voluntary time.

It would be amiss not to single out one individual who has provided more impetus than any other toward Society affairs by her excellent cooperation, voluminous background work and assistance to the officers. Miss Gloria Niemeyer has given many hours beyond those called for and the Society owes her a belated expression of thanks.

THE BULLETIN of the American Society of Hospital Pharmacists under the editorial leadership of Mr. Don Francke has continued to provide an outstanding publication for hospital pharmacists. He and the editorial staff have set a precedent for a non-revenue producing publication by not having to alter its content or appearance. It is acknowledged by all pharmacy that hard, voluntary work going into this publication speaks well for hospital pharmacists.

Officers of local and divisional chapters of the Society have contributed more than previous years to molding an organization that now has a means of reaching each individual pharmacist in hospitals. The local groups have done excellent work in advancing Society policy at the "grass roots" level, by being close in touch with the national officers.

#### EXECUTIVE COMMITTEE

Confronted with the complexity of a larger organization with the attendant problems of inter and intra organizational liaison, the Executive Committee instituted one or two precedents this year.

The development of a basic budget for Society funds provided a means of avoiding past encumbrances in making current and anticipated expense appropriations. The Society thus began to be in a position to gauge its activities. Incoming officers will not be confronted with the problem of an unanticipated deficit.

The Committee developed a broad and then a detailed objective outline for Society and Committee chairmen to follow in achieving current and future results for hospital pharmacy. This outline contains sufficient objectives to provide the Society with work from one to three years in detailed form.

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A device for record keeping of all activities of each officer and committee chairmen was developed in order that the usual static period between outgoing officers and the elected incoming group could be avoided.

A system of periodic reports of all activities of the Society in an abstracted form was mailed not only to all officers and committee chairmen but to the chairmen of all local groups. In this manner, the elected and appointed members in charge of Society affairs could for the first time be appraised of all activities on a national scope.

Following the intent of the original agreement setting up a Division of Hospital Pharmacy, the Executive Committee kept in close touch with that unit in regard to all projects for hospital pharmacy. Most of the secretarial and permanent record keeping work was provided through the Division personnel.

#### THE DIVISION OF HOSPITAL PHARMACY

Through this service facility of the American Pharmaceutical Association, set up for the benefit of hospital pharmacy, the American Society of Hospital Pharmacists received not a few benefits. Much of the detailed activity will be noted in the report of that facility.

It is the President's duty to report to the membership what this unit has done for the Society and hospital pharmacy. If there have been any disadvantages accrued, it shall be so reported.

A great barrier confronting the Society in regard to timeconsuming correspondence on membership and the increasing number of affiliations of over a thousand members has been overcome. Voluntary and thus part time officers could no longer cope with the large extent of correspondence, follow-ups, membership campaigns, election activity, certificates, and still maintain up-to-date records. The Division has ably handled this as a service to the Society.

The Division provided the Society with a sum of \$1400.00 to meet an anticipated deficit in urred in the main by the doubled printing costs of THE BULLETIN. This assistance through diversion of Division funds for the Society's benefit placed the organization in a position to be able to rely on current funds to continue all activities.

The Policy Committee had one meeting in Chicago in October, 1947. This initial meeting, among other points on the agenda affecting the Society, was to nominate a full time Director of the Division. Several candidates were suggested as being qualified, each a hospital pharmacist or a former hospital pharmacist

Investigation revealed that in these inflated times the candidates suitable to the Society could each command a salary which would undermine any activity expense of the Division. The results would be limited.

The Society then suggested through its Policy Committee representation a temporary expedient of an Acting Director and an

Assistant Director to embark on preliminary organizational work in regard to hospital pharmacy. For the past eight months, work of routine nature has been engaged in but of the type very necessary which would have confronted and required completion by a high salaried full time Director. This phase is now nearing completion.

The President and the Executive Committee have indicated to the Council of the American Pharmaceutical Association that it believes the time is now at hand to begin the function of the Division with a full time Director in order that the benefits of the agreement originally signed be realized before the two year trial period and budgetary allotments be depleted. It is expected that a review at this convention of the agreement will provide some means of realizing this very necessary appointment and work of the Division be accelerated in the more tangible benefits to hospital pharmacy and the American Society of Hospital Pharmacists' membership.

It is entirely necessary that I mention that the work of the Division has been progressing. It is equally necessary to suggest that only with a full time appointee to the Director's position will the Division give hospital pharmacy and the Society the services through undivided attention and initiative that the Society accepted in good faith when it approved the agreement. This in no way implies that the Divisional work has not been satisfactory in the light of the true facts, and all factors considered. My report merely suggests a full time individual, if obtainable, will carry out the projects that are so desired by hospital pharmacists and acknowledged by all as needed. From that appointment.

A note of caution is voiced here for future officers of the Society. The Division is an excellent approach for answering the Society's needs in every direction. As an affiliate of the American Pharmaceutical Association, that parent organization has provided an unprecedented service facility which will benefit all members of our Society. Until this date every stride made by hospital pharmacists has been through voluntary hard work in directions which others more experienced may have feared to tread. The elected officers to this date have not carried honorary titles but have had to shoulder the responsibility of the office and give undivided attention to all initiation of projects. The results speak for themselves. With the expected results from the Division under a full time appointed Director, future officers of the Society can well see hospital pharmacy attain its objectives, act in an advisory capacity and see a branch of Pharmacy keep abreast of all other strides by pharmacy as a whole under the leadership of the American Pharmaceutical Association. However, the results must prove this point before this situation begins to exist. The American Society of Hospital Pharmacists can be a logical branch of the parent organization just as medical organizations intertwine and cooperate for the benefit of the field as a whole. The voice of the hospital pharmacist must always come from this entity and it would be short sighted by any officers in pharmacy not to acknowledge this fact.

#### COMMITTEES

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reepThe majority of Society activities between annual meetings center in committee activity. It would be well to peruse the reports of each committee chairman to note what has been done this past year. This office has spent much time with each chairman in developing projects. The Committee on the Status of Pharmacists in Government Service cooperated with governmental agencies on the question of promotion of pharmacists with permanent Civil Service status but lacking a Bachelor of Science degree preventing their further promotion. The Society investigated to the fullest extent a change in Civil Service word-

ing. It appears that there is a controversy in regard what group has affected a change for the benefit of the non-Bachelor of Science pharmacist. I would like to note here that a change has been made for the benefit of those hospital pharmacists requesting it. The Committee on Membership and Organization through assistance from the Division has kept the Society at its past quota. At the moment, the Division is launching an extensive drive for membership for 1948. The Committee on Minimum Standards is prepared to present the Society with a program for acceptance following a meeting held in Washington this past year. A sub-committee of this group has already published recommended curriculum outlines for those schools teaching hospital pharmacy. The Convention Committee has been very active developing programs well in advance of meetings and fostering hospital pharmacy sectional meetings at hospital conventions. With the assistance of the Division of Hospital Pharmacy, more hospital pharmacy meetings were held than any previous year.

#### THE INSTITUTE ON HOSPITAL PHARMACY

The American Hospital Association with the co-sponsorship of the American Society of Hospital Pharmacists and the American Pharmaceutical Association held the third Hospital Institute. The national hospital association has been keenly interested in the interest displayed at this type of meeting and the faculty presented, that future plans include the development of not one Institute yearly, but two in order that all sections of the country may participate.

This year's meeting for a five day intensive course in hospital pharmacy had enrollees from as far away as the Dutch West Indies and included 133 hospital pharmacists-considerably over the quota with many late registrations rejected.

#### CONCLUSIONS

In reviewing the year's activities of the Society, I would like to point out the necessity for diligence in several matters. The Society must gain a larger group of members from the potential at hand. This can be done with cooperation of local groups in current membership drives. The lack of a full time individual devoted to Society affairs prevents concentrated effort for hospital pharmacy problems. The Division appointment of a Director should overcome that. Current funds of the Society allow for little opportunity for meetings of committees of major importance. The Division acting as liaison will accelerate these projects. Education of the hospital pharmacist toward modern methods and greater responsibility should come through the establishment of internship training courses in every large teaching hospital as a beginning, preferable in conjunction with col-leges of pharmacy if they are at hand. The practicing hospital pharmacist should avail himself of the Institute courses to educate himself on the work of out-standing colleagues, in order that he may contribute similarly to his hospital. Meetings of hospital pharmacists in their own sections at regional hospital association conventions should not be de-emphasized in groups where all hospital personnel are represented.

Thus, in conclusion, this report has touched on phases of Society activity which has been outlined in great detail to the incoming officers and committee chairmen who have received this year's records of activity. It matters little how the results are obtained whether by the American Society of Hospital Pharmacists or by the other service facility at hand - the Division of Hospital Pharmacy of the American Pharmaceutical Association. It will be to the credit of hospital pharmacy and pharmacy as a whole when the results speak for themselves.

#### MINUTES OF THE 1947 CONVENTION AND REPORT OF THE SECRETARY - 1948

Leo F. Godley

The fourth annual meeting of the A.S.H.P. was held at Milwaukee, Wisconsin during the Convention of the American Pharmaceutical Association. The first session was called to order by Chairman Hans Hansen on Monday, August 25, at 2 P.M.

Monday Morning was devoted to a tour of Milwaukee hospitals and Monday afternoon and Tuesday were devoted to business sessions and presentation of papers.

The Secretary's report was read by Secretary Frazier and

Chairman Hansen appointed a Committee on Resolutions, a Committee on Nominations, a Committee on Program for the American Hospital Associations convention in St. Louis, and a Committee on Education to study the status of hospital pharmacy courses of study in colleges.

The Treasurer's report was read by Sister Gladys Robinson and accepted as read.

A report on the activities of the Division of Hospital Pharmacy was given by Dr. Fischelis and Miss Gloria Niemeyer. A motion was passed and accepted that the agreement between the A.S.H.P. and the A. Ph. A. with respect to their integration of functions and procedures be adopted.

The constitution was amended by due process to combine the Membership and Organization Committees, to change the name of the Program Committee to Convention Committee, to make the Committee on Pharmacists in Government Service a standing committee, and to change the designations "chairman" and "vice-chairman" to "president" and "vice-president".

The reports of the Committees on Nominations and Resolutions were read, details of which along with reports of other committees, are covered in Vol. 4, No. 5, of THE BULLETIN.

Chairman Hansen introduced and installed the succeeding officers: John J. Zugich, president; Margaret S. Gary, Vice-president; Sister Mary Etheldreda, treasurer; and Leo F. Godley, Secretary.

The Executive Committee held one official meeting during the year. This meeting was held in New York City on April 12, 1948. The agenda had chiefly to do with a discussion of the progress of the Division of Hospital Pharmacy and its coordination with the Society. The Committee was informed that the Policy Committee of the Division had appointed Miss Gloria Niemeyer, Assistant Director of the Division and Dr. Robert P. Fischelis, Acting Director until such time that Division funds would permit a full time hospital pharmacist Director.

The Executive Committee approved the purchase of a special typewriter to be used in the preparation of copy for THE BULLETIN. This machine is kept at A. Ph. A. headquarters where Miss Niemeyer is to have THE BULLETIN typed for reproduction. The Committee was informed that Miss Niemeyer's full time was being expended in Division and Society activity.

During the year the Executive Committee elected Donald A. Clarke to fill the vacancy of Don E. Francke on the Policy Committee.

In accordance with established precedence, the Secretary requested that the Division continue the maintenance of the membership roll, collect dues, and send out notices of meetings.

The Division has reported to the Secretary that it has maintained the Society's roster; and has checked each member for dual membership in the A.S.H.P. and A. Ph. A. bills for the annual dues were sent out in February; and second and third notices were sent out in April and June.

The membership of the Society as of July 26 was 1,113.\* Of these, 187 are new members, and thus far there are still 232 members who have not yet paid dues for 1948. The Division has cooperated with the Society's Membership and Organization Committee in membership drives; and has distributed membership cards and certificates. Secretarial duties connected with the election of officers were also conducted by the Division.

There have been four new groups affiliated with the Society this year. They are: The Akron Area Society of Hospital Pharmacists, The Southern California Chapter of the A.S.H.P.; The Society of Hospital Pharmacists of Greater Cincinnati, and The Midwest Association of Sister Pharmacists. Several other groups are in the process of formation and/or affiliation.

The officers duly elected for the coming year are: W. Arthur Purdum, president; Geraldine Stockert, vice-president, J. R. Cathcart, Secretary; and Sister Jeanne Marie, treasurer.

#### REPORT OF THE MEMBERSHIP AND ORGANIZATION COMMITTEE - 1948

J. Robert Cathcart

At the 1947 annual meeting of the American Pharmaceutical Association, the following members of the membership and organization committee were appointed: J. R. Cathcart, Chairman, Chester County Hospital, West Chester, Pa.; Sister M. Clara Francis, St. Joseph's Hospital, Memphis, Tenn.; W. C. Anderson, Veterans Administration, Philadelphia, Pa.; and Joseph Vance, South Highlands Infirmary, Birmingham, Ala.

The chairman of the membership and organization committee met in Washington with Dr. Fischelis to plan the publication of a nominating letter and a brochure which was to be prepared by the membership and organization committee.

Due to the great distance separating the members of the committee it was impossible to hold a committee meeting together, so, all committee activities were activated by letters of the individual members.

As the nominations came in from the pamphlet published by the membership committee of the previous year, letters were sent to these members asking for their membership in the organization and with the cooperation of the editor, THE BUL-LETIN was mailed to each of these prospective members.

Mr. W. C. Anderson, compiled the names and addresses of all pharmacists working in the Veterans Administration; this list being the first existing one to our knowledge and was forwarded to headquarters in Washington, to be added to the existing membership list so that those who are not members would receive brochure and nomination letters.

Headquarters cooperated in carefully reviewing lists of hospital pharmacists as supplied by publications and by the Directory of the American Hospital Association. As a result it was estimated that 1,305 hospital pharmacists were not members of the A.S.H.P. and to them a cordial invitation and nomination by the president of the organization was mailed.

At the institute held in Princeton, the members of the committee present launched an aggressive campaign to enroll those attending who were not already members of the A.S.H.P. The results of which were most gratifying.

A brochure was prepared composed of ideas sent to the chairman by the committee members. This brochure was intended to give a brief outline of the history, aims, advantages, and operating mechanism of the organization as it exists to the prospective members. This brochure to date has not been published, but should serve in the future as a basis for futhering membership.

The letters as previously mentioned, due to the excessive

<sup>\*</sup> Total A.S.H.P. Paid Membership, October 15, 1948 - 1186

duties and work existing at headquarters, were not mailed early enough to materially effect membership at this time; but should increase by no small amount our membership in the near future. As of July 26, the American Society of Hospital Pharmacists had 1,113 members, of these, 187 are new members who have joined since the last convention. There are approximately 232 delinquent members, who have not paid dues for 1948 at this date.

The membership and organization committee took steps to correlate the already existing hospital pharmacist groups, meeting at regular intervals throughout the United States. Form letters were mailed to possible leaders in these groups asking

for their cooperation toward one voice and one organization, working through one Pharmaceutical Association toward a better and closer knit hospital pharmacist organization. The results were very pleasing inasmuch as four local groups being accepted for affiliation with the American Society of Hospital Pharmacists. The new groups being: the Akron Area Society of Hospital Pharmacists; the Southern California Chapter of the American Society of Hospital Pharmacists; the Society of Hospital Pharmacists of Greater Cincinnati and the Mid-West Association of Sister Pharmacists, Chicago. There are prospects of other affiliates in Connecticut, Pittsburgh, California, and Washington, D. C. at this time.

#### REPORT OF THE TREASURER

September 14, 1947 to August 1, 1948

Sister Mary Etheldreda

### BALANCE AND RECEIPTS BALANCE Deposit in Manufacturers Trust Company, RECEIPTS Membership Dues......\$ 3430.66 Subscriptions......\$ 324.45 Gifts.....\$ 212,00 Reprints.....\$ 83.50 Miscellaneous Sales.....\$ TOTAL BALANCE AND RECEIPTS......\$ 5955.59 DISBURSEMENTS AND BALANCE DISBURSEMENTS......\$ 5321.04 BALANCE Deposit in Manufacturers Trust Company, Brooklyn, New York on August 1, 1948......\$ 634.55 TOTAL DISBURSEMENTS AND BALANCE.....\$ 5955.59

#### REPORT OF THE COMMITTEE ON MINIMUM STANDARDS - 1948

W. Arthur Purdum, Chairman

This report is printed in full on page 230 of this issue of THE BULLETIN. It represents the culmination of several years of work by several successive committees. The committee met in Washington D. C. at the Headquarters Building of the American Pharmaceutical Association on May 15 and 16, 1948. At the time of this meeting, broad basic standards for the hospital pharmacy covering organization, policies, personnel, facilities, responsibilities and pharmacy committee were approved. Also, standards for internships in hospital pharmacy were formulated and approved. These represent a revision of the work of Mr. Donald A. Clarke, former chairman of the committee. Individ-

ual committee members were then assigned certain phases of these fundamental standards for elaboration. The detailed standards were then sent to the chairman for compilation into this final report.

Editor's Note: Members of the Society will want to review the final report and forward suggestions to the present chairman of the Committee on Minimum Standards, Mrs. Evlyn Gray Scott, at St. Luke's Hospital, Cleveland, Ohio.

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Much thought and effort was devoted to the Convention Committee Objectives as outlined for this year by President Zugich. Results when measured by the effort expended were unsatisfactory.

The committee has two major responsibilities:

1. The Annual Convention program, and

Promoting Hospital Pharmacist Participation in State and Hospital Programs.

It is the feeling of the Committee that the second responsibility should be centered at Division Headquarters. Here at the nerve center of A.S.H.P. activities continuity in contacting the various Hospital Associations for program space would continue from year to year. The local hospital pharmacist's group would be activated and made responsible for conducting the program.

As it is now, the new committee has rather meager informa-

tion on what was actually done the year before. By the time actual contact is made with the various Hospital Association Program Chairmen, programs are usually complete. If program time is obtained then contact must be made with the local hospital pharmacists group, who may or may not respond. Again, the local hospital pharmacist group may have acted independently. Such duplication leads to more or less confusion. If Division Headquarters assumed the responsibility they could carry on from one year to the next with, I am sure, much less effort and far better results. This suggestion is offered for consideration by the Society.

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The Committee expresses its appreciation to all who have contributed so generously to this years activities. Personally, I wish to thank each member of the Committee for their whole-

hearted support and untiring work.

#### REPORT OF THE COMMITTEE ON PHARMACIST IN GOVERNMENT SERVICE - 1948

Eddie Wolfe, Chairman

The entire situation concerning B. S. degrees for government pharmacists was discussed at a conference with Dr. W. Paul Briggs, Chief of the Pharmacy Division of the Veterans Administration, on November 19, 1947, which was attended by Chairman Einbeck of the Joint A. Ph. A. Committee on the Status of Pharmacists in Government Service, Mr. Eddie Wolfe, Chairman of the Committee on Pharmacists in Government Service of the A.S.H.P., Mr. John Zugich, President of the A.S.H.P., Mr. George F. Archambault, Chief of Pharmacy Service for the U.S. Public Health Service, Mr. E. Burns Geiger, Assistant to Dr. Briggs, and Dr. Robert P. Fischelis, Secretary of the A. Ph. A.

It was agreed that all past regulations of the V. A. concerning pharmacists would be upheld. The ruling that only V. A. pharmacists with B. S. degrees would be eligible for promotion was to be revised to include those pharmacists without B. S. degrees.

At a meeting of the Executive Committee on April 12, 1948, it was decided that the Society's Committee on Government Service was an over-lapping element since the A. Ph. A. Committee represents all branches of American pharmacy in this connection. It was also felt that the member of the A. Ph. A. Committee was to represent the Society's interests in hospital pharmacy in this connection. The Society's Committee on Government Service is a standing committee and will therefore require a vote in convention to inactivate it.

Notice was received by your chairman on May 18, 1948 that in accordance with a decision of the solicitor of the V. A., persons employed as pharmacists in the Department of Medicine and Surgery on January 3, 1946 may be promoted without regard to educational requirements provided they meet the experience requirements and are administratively recommended. This concludes the Committee's work to promote V. A. pharmacists without B. S. degrees.

Suggestions Submitted by the Committee for the Following Year

- 1. Include a hospital pharmacist as a member of the Board of Consultants on Pharmacy to the Surgeon General of the Army.

  2. If a hospital pharmacist is appointed to the Surgeon General's Board of Consultants, he should also be appointed as the Society's representative on the A. Ph. A. Government Service Committee.
- Abolish this Committee due to its duplication of purpose as the Society has representation on the A. Ph. A.'s Government Committee.

This Committee did not make the rapid progress hoped for by President Zugich in his plan for the Society dated October 3, 1947. The four objectives presented by the President were thus not fully taken care of and provide a basis for committee action in the coming year.

## REPORT OF THE SPECIAL COMMITTEE ON LEGISLATION AFFECTING HOSPITAL PHARMACY - 1948

Herbert L. Flack, Chairman

Certain statistics were obtained and some few goals were met, either as a direct action of this committee or as indirect action through certain friends in the various schools of pharmacy. It might be noted that as a continued action from the previous year, Mr. P. H. Costello, Secretary, The National Association of Boards of Pharmacy has stated "all Boards approved our standards for experience which specify that it may be acquired in any pharmacy, either hospital or retail, which is under the supervision of a registered pharmacist. There are only six states wherein the law states experience must be acquired in a retail store and I think the Boards in those States will now interpret that to include hospital (experience)."

An approach to standardization of narcotic regulations on a nation-wide basis was presented to the Commissioner of Narcotics with little effect. At the third Institute on Hospital Pharmacy, however, some accord was obtained with a representative of the Commissioner's Office to the effect that if the American Society of Hospital Pharmacists would present a standardized program of internal narcotic control, the Commissioner would endorse such a plan. It is thought that this presents a great challenge for the committee this coming year, as an additional project to pursue.

The Committee gratefully expresses thanks to all who have helped in contributing to whatever success this program has

had.

REPORT OF SPECIAL COMMITTEE ON EDUCATION - 1948

W. Arthur Purdum, Chairman

This special committee was appointed by past chairman Hansen during the 1947 meeting of the Society held in Milwaukee, Wisconsin. The committee was instructed to draw up proposals for a graduate curriculum in hospital pharmacy and to prepare an outline for a course in hospital pharmacy.

The course outline has already been published as an interim report of the committee. This appeared in THE BULLETIN for

March-April 1948, on page 65.

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The committee, at this time, is not prepared to make its recommendations concerning the graduate curriculum in hospital pharmacy. It is the consensus of opinion in the committee that no such proposals should be made until after the appearance of the report of The Pharmaceutical Survey, and time allowed for the digestion of findings and recommendations therein. There-fore, since the work of this committee is not complete, it is suggested that this special committee be continued for at least one more year to complete its assignment.

#### REPORT OF THE ASSISTANT DIRECTOR of the DIVISION OF HOSPITAL PHARMACY - 1948

Gloria Niemeyer

In accordance with the agreement between the American Society of Hospital Pharmacists and the American Pharmaceutical Association, the Division of Hospital Pharmacy with headquarters at the American Pharmaceutical Association in Washington has carried out certain duties in connection with the Secretarial work of the Society. At Mr. Godley's request and in line with precedent established when the Division was formed, the followingduties have been handled at the headquarters of the American

Pharmaceutical Association during the past year.

I. Maintained roster for hospital pharmacists who are members of the American Society of Hospital Pharmacists and carried out membership activities. Bills were mailed in February and second and third notices in April and June. All members either joining the A. S. H. P. or renewing membership were checked against A. Ph. A. membership as required by the Society's Constitution and By-Laws. Those who had not paid A. Ph. A. dues were sent a letter and to date practically all A. S. H. P. members are members of the American Pharmaceutical Association. To date, August 1, 1948, 926 members have renewed 1948 memberships and 187 new members have joined, making a total of 1,113\* paid members in the American Society of Hospital Pharmacists. Since the recent mailing of the membership drive made in July, it is probable that we will have additional new members to be accounted for in this year's membership list. There were 232 delinquent members on August 1.

II. Membership activities with local groups were handled through the Division of Hospital Pharmacy. Four new local chapters have been accepted for affiliation with the national society since our last convention in 1947. New groups accepted during the last year included the Akron Area Society of Hospital Pharmacists, The Southern California Chapter of A. S. H. P., the Society of Hospital Pharmacists of Greater Cincinnatiand the Mid-

West Association of Sister Pharmacists (Chicago).

Representing the Division of Hospital Pharmacy, Miss Niemeyer attended the following meetings of the local A. S. H. P. chapters: Philadelphia Hospital of Pharmacists' Association and Southeastern Hospital Pharmacists Association.

Preliminary work in organizing local chapters of the A. S. H. P.

has been carried out in a number of areas during the past year. These include Connecticut, Pittsburgh and Northern California.

III. Membership Drive - The Division of Hospital Pharmacy cooperated with the Membership Committee of the A. S. H. P. in carrying out a membership drive. A letter carrying Mr. Cathcart's (chairman of the membership committee) signature along with application blanks and a convention bulletin was forwarded to 1305 hospital pharmacists who are not members of the American Society of Hospital Pharmacists. It is probable that we will not have the complete results of this mailing until December.

IV. A. S. H. P. Election - The work involved in carrying out the 1948 election was handled through the headquarter's office.

V. A. S. H. P. BULLETIN - The Division of Hospital Pharmacy cooperated in the publication of THE BULLETIN. THE A.S.H.P. has purchased a special typewriter for THE BULLETIN work and at the present time the typing, makeup, and proof reading for THE BULLETIN are done at the headquarters' office. Some sections of THE BULLETIN are also written by staff members of the Division of Hospital Pharmacy.

VI. The Division of Hospital Pharmacy cooperated actively in sponsoring and working out details of the Institute on Hospital

Pharmacy held at Princeton, last June.
VII. Minimum Standards - The Division of Hospital Pharmacy
worked with the A. S. H. P.'s Committee on Minimum Standards and sponsored a committee meeting at the headquarters' building in May. At this meeting a set of minimum standards were work ed out for study to be approved at a later date.
VIII. The Division of Hospital Pharmacy also served as an

information center on matters related to Hospital Pharmacy.

IX. Cooperation with U. S. Public Health Service-The Division worked with the Hospital Facilities Division of the U. S. Public Health Service on supplying a booklet, "Plans and Equipment for the Hospital Pharmacy" as a joint project. Copies of the booklet were sent to all members of the A. S. H. P.

X. Representatives from the Division of Hospital Pharmacy attended meetings of the A. S. H. P.'s executive committee when -

ever requested.

#### RESOLUTIONS PASSED AT 1948 A. S. H. P. MEETING

RESOLVED that the American College of Surgeons in cooperation with an A. S. H. P. committee working through the Division of Hospital Pharmacy, be requested to restudy the evalua-tion plan for pharmacists in hospitals to include higher standards for the approval of pharmacies.

RESOLVED that the Policy Committee of the Division of Hospital Pharmacy be requested to develop and publish a definite program for the Division of Hospital Pharmacy.

#### AMENDMENTS TO THE CONSTITUTION AND BY-LAWS

The following is the proposed amendment to the constitution of the American Society of Hospital Pharmacists as read at the 1948 San Francisco convention:

Article V - AFFILIATED CHAPTERS. A local or regional group of hospital pharmacists numbering ten or more active members of the Society may become an affiliated chapter of the American Society of Hospital Pharmacists by conforming to the rules governing such chapters as are established or may be established by the Executive Committee of the Society.

The present Article V, AMENDMENTS, would then become Article VI.

The following changes in the By-Laws were adopted by the Society in its 1948 meeting in San Francisco.

Chapter I. - ELECTION OF OFFICERS.

Article 1. - NOMINATION OF PRESIDENT, VICE-PRESIDENT and TREASURER. At the first session of each annual meeting of the Society, the President shall appoint a Committee of three members who shall nominate two candidates for each of the following offices: President, Vice-President, and Treasurer. The Committee shall present its nominations at the final session of the annual meeting, at which time additional nominations may be made from the floor.

Article 2. - BALLOTS. The names of the candidates shall be submitted by mail to every active member of the Society by the Secretary within two months after their nomination, together with a request that the member indicate on the ballot enclosed his choice of candidates for the offices to be filled and to return the same by mail within 30 days of the date printed on the ballot.

Article 3. - COUNTING OF BALLOTS. The ballots received withing 30 days of the date printed on the ballot are to be sent by the Secretary to the Board of Canvassers, which shall consist of at least three active members of the Society, who shall count the votes of the dues paid members only. The Board of Canvassers shall certify to the Secretary the result of the election. The Secretary shall notify the successful candidates and the results of the election shall be published in THE BULLETIN of the American Society of Hospital Pharmacists.

Article 4. - INSTALLATION OF OFFICERS. The officers thus elected by a plurality of votes, together with the Secretary elected as hereinafter provided, shall be installed at the final session of the annual meeting of the Society following their election.

Article 5. - ELECTION OF SECRETARY. The Secretary of the Society shall be nominated by the Executive Committee and elected annually by the House of Delegates of the Society.

Chapter II - DUTIES OF OFFICERS. Under Article 2. SEC-RETARY. Add the following sentence, "The Secretary shall be a member and secretary of all standing Committees."

Chapter II Article 4. - DELEGATES. The delegates to the Society are to be selected by affiliated chapters of the Society. Each affiliated chapter with 50 or less active members is entitled to one delegate. Each affiliated chapter with more than 50 active members is entitled to two delegates. Delegates shall be members of the House of Delegates of the Society.

Chapter IV - HOUSE OF DELEGATES. The House of Delegates shall consist of the Executive Committee of the Society and of delegates from the affiliated chapters of the Society. It shall meet on the evening prior to the first annual meeting. The House of Delegates shall assist the Executive Committee in the formulation of policy, and the Delegates shall present a report in writing to their respective affiliated chapters concerning the conclusions reached.

Chapter V - MEMBERSHIP DUES replaces the present Chapter IV - FINANCES.

Chapter V - MEMBERSHIP DUES. The membership dues shall be \$3.00 per year payable in advance. Membership in the Society and the obligation for dues will continue from year to year unless a member's resignation, signed by the member, is received by the Secretary prior to the end of the year for which dues have been paid. Membership dues are payable and due on the anniversary date of the time the member first joined the Society. Any member in arrears for dues for one year shall cease to be a member of the Society, provided that at least two weeks before his name is removed from the rolls, the Secretary shall send him a written notice of his delinquency, together with a copy of the by-laws pertaining to the subject. Such a person may be reinstated as a member provided his arrears have been paid and payment of current membership dues is made.

The present Chapter V, Standing Committees, then becomes Chapter VI.

The new Chapter VI, Article 3, add the following sentence: "It shall develop minimum standards for pharmacies in hospitals." (This refers to the Minimum Standards Committee.)

Chapter VI - Article 4. - FINANCE COMMITTEE. Place a period after the word, "appropriations", thus deleting the phrase, "not exceeding \$25.00."

Article 5. - COMMITTEE OF PHARMACISTS IN GOVERN-MENT SERVICE. The Committee of Pharmacists in Government Service shall assemble current information pertaining to problems affecting pharmacists in government service. Periodic review shall be made by the Committee of duties performed by hospital pharmacists in government service for the purpose of recommending methods conducive to the improvement of hospital pharmacy service. The findings and recommendations of the Committee shall be transmitted to the Director of the Division of Hospital Pharmacy, who shall be responsible for obtaining evaluation of the findings and recommendations for the purpose of resolving and implementing them, either through the National Committee on the Status of Pharmacists in Government Service, or other indicated organizations.

## A. S. H. P. Officers, Committees, and Affiliated Chapters 1948 - 49

#### OFFICERS

PRESIDENT

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